FRIDAY. JANUARY 1.

Train Accidents in November.

The following accidents are included in our record for the month of November:

COLLISIONS.

REAR.

1st, a. m., freight on New York, Pennsylvania & Ohio broke in two near Ashland, Pa., and rear section ran into forward one, wrecking 5 cars and injuring 2 trainmen.

2d, very early, freight on Chicago, Milwaukee & St. Paul ran over a misplaced switch and into another freight on a siding at Whitman, Minn., wrecking locomotive and 8 cars and killing engineer.

2d, a. m., freight on Pennsylvania Railroad ran into preceding freight which had stopped at Rahway, N. J., for water, damaging 2 cars.

2d, night, passenger train on Chicago & Alton ran into preceding freight near Lemont, Ill., wrecking engine and several cars and injuring 2 trainmen.

5th, very early, freight on Wabash, St. Louis & Pacific ran into some cars broken loose from a preceding freight near Huntsville, Mo. Several cars were damaged, and a car loaded with oil caught fire and 7 cars were burned up. Two trainmen were hurt.

6th, a. m., freight on Grand Trunk ran over misplaced switch into another freight on a siding in St. Thomas, Ont., damaging several cars.

6th, noon, freight on New York & New England ran over misplaced switch into freight standing on siding in Willimantic, Conn., damaging several cars.

6th, night, passenger train on Cooperstown & Susquehanna Valley ran into rear of construction train near Portland, N. Y., wrecking two cars, killing a section foreman and injuring 4 laborers.

7th, a. m., freight on Central Ontario ran into rear of work train near Trenton, Ont., killing 1 laborer and injuring 5 others.

10th, very early, freight on Pittsburgh, Fort Wayne & Chicago ran into preceding freight near Inwood, Ind., wrecking 4 cars.

11th, night, passenger train on Burlington & Missouri River ran into some cars blown out of a siding at Superior, Neb., doing some damage.

11th, night, freight on Western & Atlantic ran into preceding freight near Bolton, Ga., damaging several cars.

12th, a. m., freight on New York, Lake Erie & Western broke in two near Vail's Gate, N. Y., and rear section ran into forward one, damaging 10 coal cars.

16th, a. m., passenger train on Savannah, Florida & Western ran over a misplaced switch and into a freight train on a siding at Branford, Fla., damaging 2 cars and killing a trainman.

16th, a. m., freight on Pennsylvania Railroad broke in two near Cresson, Pa., and rear section ran into forward one, wrecking several cars.

21st, night, passenger train on New York, Lake Erie & Western ran into yard engine in Hornellsville, N. Y., doing some damage and injuring 2 trainmen.

23d, a. m., ballast train on Scioto Valley ran into rear of a freight near Portsmouth, O., damaging 2 cars.

25th, a. m., repair train on New York, Lake Erie & Western ran into rear of freight near Basket, Pa., damaging several cars.

25th, p. m., freight on Pittsburgh Junction ran into preceding freight in Pittsburgh, Pa., damaging a car.

26th, a. m., yard engine on New York, Lake Erie & Western ran into rear of freight in Paterson, N. J., wrecking 3 cars loaded with coal.

26th, night, passenger train on Baltimore & Ohio ran over misplaced switch and into freight car standing on siding at Glover's Gap, W. Va. Engine and 3 cars wrecked and 2 trainmen slightly hurt.

27th, p. m., passenger train on Burlington & Missouri River ran over a misplaced switch and into a freight standing on a siding in Lincoln, Neb., damaging several cars and injuring 2 trainmen.

27th, night, freight on Indiana, Bloomington & Western ran into preceding freight at St. Joseph, Ill., damaging 6 cars.

28th, night, freight on Louisville & Nashville ran into preceding freight on a siding at Peewee Valley, Ky., damaging several cars. This collision caused afterwards another accident.

30th, very early, passenger train on Western of Alabama ran into a flat car which had been blown from the siding on the main track near Montgomery, Ala. The engine was damaged, the engineer badly and the fireman slightly hurt.

BUTTING.

3d, night, butting collision between passenger and freight train on East Tennessee, Virginia & Georgia near Childersburg, Ala., wrecked both engines and 13 cars, killing 2 trainmen, injuring 2 others fatally and 5 more less severely.

5th, night, butting collision between two freights on Utica & Black River near Philadelphia, N. Y., damaged both engines.

6th, a. m., butting collision between two freights on New York, Pennsylvania & Ohio, wrecked both engines and 10 cars.

7th, night, butting collision between two passenger trains on East Tennessee, Virginia & Georgia, near Mossy Creek, Tenn., wrecked both engines and mail cars, injuring two mail agents and 3 passengers. Collision said to have been caused by a dispatcher's mistake.

14th, night, butting collision between two freights on Chicago & Northwestern near Marshalltown, Ia., wrecked both engines and several cars, killing an engineer and injuring a fireman.

23d, night, butting collision between freight and wild engine on Union Pacific, near Buffalo, Col., damaged 3 engines and 6 cars, and injured 6 trainmen.

24th, p. m., butting collision between passenger and freight train on St. Louis & San Francisco, near Lancaster, Ark., damaged both engines and several cars, injuring 2 trainmen.

28th, a. m., butting collision between freight and passenger train on East & West Railroad, near Rowell, Ala., damaged both engines slightly.

CROSSING.

8th, a. m., milk train on Boston & Lowell ran into passenger train at crossing at Nashua Junction, N. H., damaging engine and 2 cars. The accident is said to have been caused by the engineer mistaking a signal.

23d, a. m., passenger train on Florida Southern ran into freight on branch track at Micanopy Junction, Fla., damaging two cars and injuring 2 trainmen.

DERAILMENTS.

BROKEN RAIL.

2d, a. m., passenger train on Texas & Pacific was derailed near Jewella, La., by broken rail. Five passengers were slightly hurt.

9th, a. m., passenger train on Central Pacific was derailed near San Pablo, Cal., by broken rail, and several cars damaged.

15th, night, freight on Pittsburgh & Lake Erie was derailed near Struthers, O., by a broken rail.

23d, a. m., freight on Missouri, Kansas & Texas was derailed near Alkire, Tex., by broken rail. A brakeman and a drover were hurt.

25th, a. m., passenger train on Chester & Lenoir was derailed near Gastonia, N. C., by a broken rail. Three trainmen and 9 passengers were hurt.

BROKEN SWITCH-ROD.

9th, night, passenger train on New York Central & Hudson River was derailed at Spencerport, N. Y., by a broken switch-rod.

BROKEN BRIDGE.

16th, night, passenger train on Vicksburg, Shreveport & Pacific broke through a bridge near Tallulah, La., and engine and baggage car were wrecked.

18th, early, freight on Cincinnati, Hamilton & Dayton went through a bridge near Julietta, Ind., and engine and 18 cars went down into Big Buck Creek and were wrecked. Four trainmen were badly hurt. One abutment of the bridge had been partly washed out by a freshet.

SPREADING OF RAILS.

5th, p. m., freight on Cleveland & Marietta was derailed in Marietta, O., by spreading of the rails and a number of cars were damaged.

17th, night, passenger train on Texas & Pacific was derailed near Provencal, La., by spreading of the rails. Engineer was hurt.

21st, night, freight on Florida Railway & Navigation Co. road was derailed near West Farm, Fla., by spreading of the rails, injuring 2 trainmen badly.

23d, a. m., freight on Gulf, Colorado & Santa Fe was derailed near Allen, Tex., by spreading of the rails.

24th, a. m., freight on Texas & Pacific was derailed near Woodlawn, Tex., by spreading of the rails.

BROKEN WHEEL.

2d, p. m., freight on New York, Lake Erie & Western was derailed near Calicoon, N. Y., by broken wheel.

7th, night, passenger train on Texas & Pacific was derailed in Fort Worth, Tex., by broken wheel.

11th, a. m., freight on Pennsylvania Railroad was derailed near New Brunswick, N. J., by broken wheel.

11th, p. m., freight on Grand Trunk was derailed at Cardinal, Ont., by broken wheel. A brakeman was killed.

24th, a. m., freight on Oregon Railway & Navigation Co. road was derailed near Wyeth, Ore., by broken wheel, and 7 cars were wrecked.

BROKEN AXLE.

2d, a. m., freight on Pennsylvania Railroad was derailed near Johnstown, Pa., by a broken axle.

6th, a. m., freight on New York Central & Hudson River was derailed near Fox Ridge, N. Y., by broken axle, and several cars were damaged.

7th, a. m., 15 cars of freight on Pennsylvania Railroad near Port Matilda, Pa., by broken axle.

10th, very early, freight on Northern Pacific was derailed on bridge over Red River at Fargo, Dak., by broken axle. The bridge and 5 cars were badly damaged.

BROKEN TRUCK.

1st, a. m., freight on Pennsylvania was derailed near Duncannon, Pa., by broken truck.

2d, night, freight on Chicago & Alton was derailed near Corder, Mo., by broken truck.

11th, night, 4 cars of freight on New York, Lake Erie & Western were derailed near Deposit, N. Y., by broken truck.

28th, p. m., 10 cars of freight on Chicago, Burlington & Quincy were derailed near Oswego, Ill., by broken truck.

BROKEN BRAKE-BEAM.

4th, a. m., freight on Chicago & Alton was derailed near Atlanta, Ill., by broken brake-beam falling on the track.

7th, night, freight on Chicago, St. Paul, Minneapolis & Omaha was derailed near Knapp, Wis., by a broken brake-beam falling on the track.

ACCIDENTAL OBSTRUCTION.

14th, a. m., freight on Texas Mexican was derailed near Los Angeles, Tex., by some timbers which fell from a freight car upon the track.

17th, night, freight on Louisville & Nashville was derailed near Sebree, Ky., by a tree which had fallen across the track. A brakeman was hurt.

25th, a. m., freight on Western North Carolina ran into a rock which had rolled upon the track near Deep Water, N. C., and the engine and several cars were derailed and went down a steep bank into the French Broad River. The engineer, fireman and 2 brakemen were carried down and drowned in a deep eddy of the river.

28th, night, passenger train on Louisville & Nashville was derailed near Peewee Valley, Ky., by the wreck of a train standing on a siding, which had been thrown over on the main track.

30th, a. m., freight on Cleveland, Mt. Vernon & Delaware struck a push car loaded with rails, which stood on the track near Mt. Vernon, O., and engine and 4 cars were derailed. A rail passed through the boiler of the locomotive and the fireman was badly scalded.

CATTLE.

3d, a. m., passenger train on Wabash, St. Louis & Pacific ran over a cow near Morrisonville, Ill., and the engine and 1 car were derailed, injuring 2 trainmen.

8th, a. m., freight on Memphis, Birmingham & Atlantic was derailed near Holly Springs, Miss., by running over a cow.

23d, a. m., freight on Houston & Texas Central ran over a cow near Corsicana, Tex., and 7 cars were derailed.

WASH-OUTS AND LAND-SLIDES.

2d, a. m., freight on Brattleboro & Whitehall ran into a wash-out near Townsend, Vt., and the engine and several cars were wrecked, injuring 3 trainmen and 2 passengers.

7th, night, passenger train on Alabama Great Southern ran into a wash-out near Meridian, Miss. Five passengers were slightly hurt.

9th, very early, passenger train on New York, West Shore & Buffalo ran into a wash-out near Little Falls, N. Y. The engine passed over, but the tender and 3 cars were piled up in a bad wreck, killing 1 passenger and injuring 4 others slightly.

9th, p. m., freight on Troy & Greenfield ran into a landslide near Bardwell's Ferry, Mass., and engine and 5 cars were derailed.

24th, a. m., passenger train on South Pacific Coast road ran into a wash-out near Santa Cruz, Cal., and the engine was wrecked.

MISPLACED SWITCH.

3d, night, passenger train on Old Colony was derailed in Fitchburg, Mass., by misplaced switch. Fireman and 5 passengers were slightly hurt.

11th, a. m., passenger train on Texas & St. Louis was derailed near Texarkana, Tex., by a misplaced switch. The engine upset, killing the engineer.

23d, a. m., engine of freight on Boston & Lowell was derailed in the Boston yard by a misplaced switch.

27th, p. m., engine of freight on Boston & Lowell was derailed near Plymouth, N. H., by misplaced switch. The engine upset, killing the engineer.

OPEN DRAW.

20th, p. m., construction train on Northern Pacific ran into an open draw at Ainsworth, Or., and 2 cars went down into the river. The engineer charges that no signal was displayed at the draw.

28th, a. m., freight on Port Royal & Augusta was derailed at the bridge over the Savannah, near Augusta, Ga. The draw-tender closed the bridge quickly enough to prevent the locomotive from going into the river, but not quickly enough to save the engine from derailment.

RAIL REMOVED FOR REPAIRS.

25th, night, freight on Central Branch was derailed at Lindsey, Kan., where section men had removed a rail for repairs and neglected to put out the proper signals. One man was killed.

MALICIOUSLY CAUSED.

1st, a. m., passenger train on New York, Lake Erie & Western was derailed in Goshen, N. Y., by a switch which had been purposely misplaced.

12th, a. m., express train on Pittsburgh Division of Baltimore & Ohio was derailed at Bluestone Quarry, near Connellsville, Pa. The engine ran along the ties for some distance, but stopped on the road-bed. The cars broke loose from the engine, and the rear car, which was a sleeper, rolled down the bank into the Youghiogheny River. The sleeper was badly wrecked, and of the 16 passengers in it every one was hurt more or less. The other cars were not badly damaged, and no one in them was hurt. The accident took place at a very sharp curve, and at the point where the engine left the track there is a siding leading to the quarry. It is believed that this switch was either accidentally left open or had been purposely misplaced.

21st, night, freight on Gulf, Colorado & Santa Fe was derailed near Navasota, Tex., by ties piled up on the track. The engine upset down the bank, killing the engineer and injuring fireman fatally.

UNEXPLAINED.

1st, very early, freight on Burlington, Cedar Rapids & Northern was derailed near Northwood, Minn., and the engine and 9 cars were piled up in a bad wreck, killing 2 trainmen and injuring another.

7th, a. m., coal train on Lehigh Valley was derailed near Perth Amboy, N. J., and 25 cars wrecked.

8th, a. m., freight on Missouri, Kansas & Texas was derailed near Fort Worth, Tex.

9th, a. m., freight on Peoria, Decatur & Evansville was derailed near Sand Creek, Ill.

12th, a. m., 9 cars of freight on New York, Lake Erie & Western were derailed near Hampton, N. Y., and fell 60 feet into the Wallkill River. Two brakemen were hurt.

13th, night, passenger train on Chicago & Atlantic was derailed in Chicago and 2 passengers were slightly hurt.

OTHER ACCIDENTS.

BROKEN PARALLEL ROD.

1st, a. m., engine of passenger train on New York, Lake Erie & Western broke a parallel-rod near Lordville, N. Y., and was considerably damaged.

23d, a. m., engine of passenger train on New York Central & Hudson River broke a parallel-rod when near Canastota, N. Y., doing some damage.

MISCELLANEOUS.

19th, night, car loaded with cotton in freight on Vicksburg & Meridian caught fire when near Vicksburg, Miss., and two cars were burned up.

30th, night, wheel broke under a car in a passenger train on Wabash, St. Louis & Pacific, near Moberly, Mo., but car did not leave the track.

SUMMARY.

This is a total of 96 accidents, in which 19 persons were killed and 118 injured. As compared with November, 1884, the number of accidents is the same, but there is a decrease of 28 killed and of 12 injured.

The eleven months of the current year to the end of November show a total of 1,143 accidents, 276 killed and 1,397 hurt; an average per month of 104 accidents, 25 killed and 127 injured.

A fuller statement of the totals and average for the month, with a summary of the causes of accident, will be found on another page.

American Society of Civil Engineers.

Two opposing tickets have, for the first time in its history been placed in nomination for officers of this Society, as follows:

	Regular.	Opposition.
President	Washington A. Roebling.	Henry Flad.
Vice-Presidents	Thomas F. Rowland.	Thomas C. Keefer.
	Charles H. Latrobe.	Thomas F. Rowland.
Secretary	John Bogart.	John Bogart.
Treasurer	J. James R. Croes.	J. James R. Croes
Directors	Oliver W. Barnes.	Geo. S. Greene, Jr.
	George S. Greene, Jr.	William R. Hutton.
	William G. Hamilton.	W. Howard White.
	William R. Hutton.	Henry G. Morris.
	Otho E. Michaelis.	Charles L. Strobel.

The regular ticket is accompanied by the following circular:

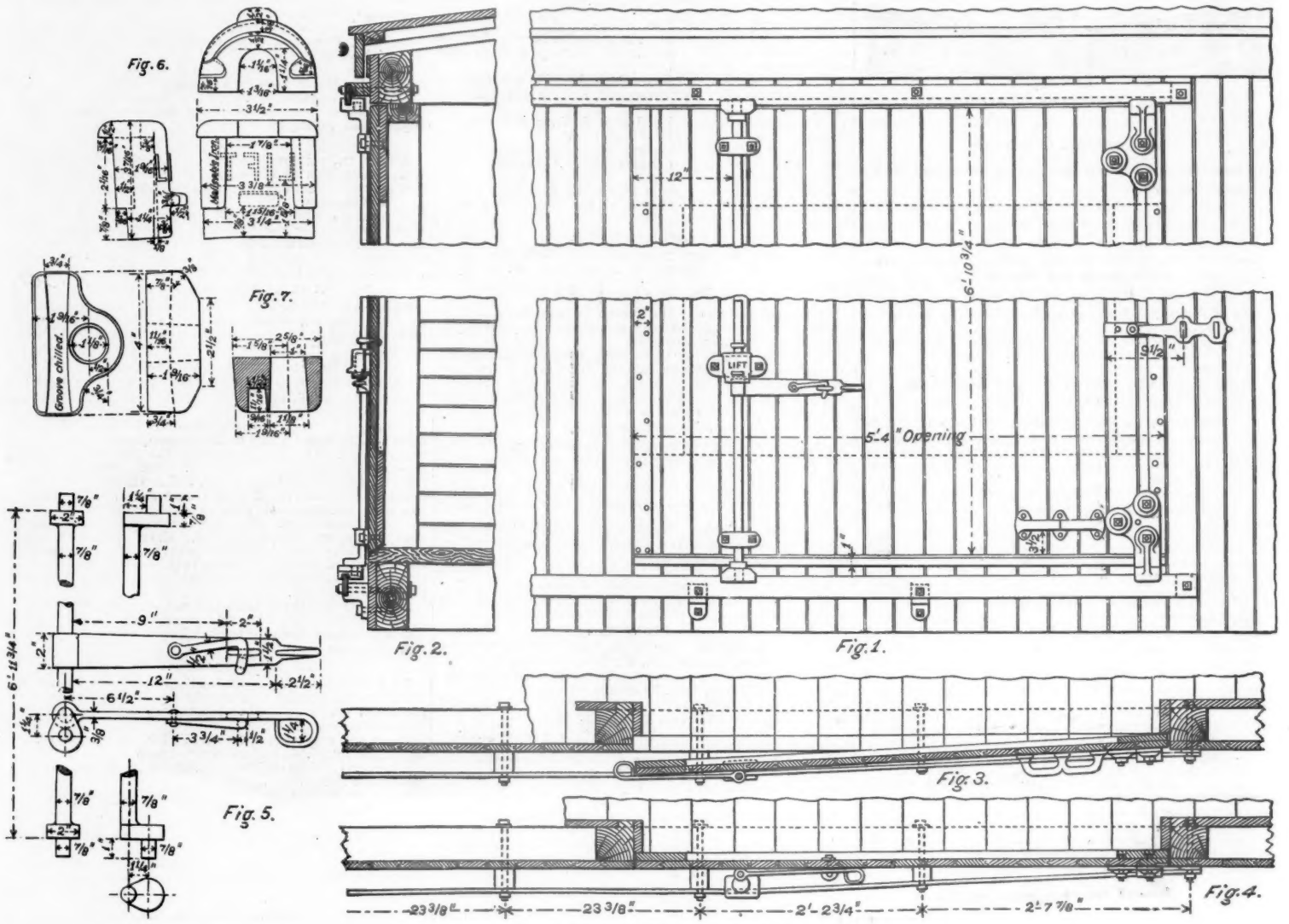
"It has come to the knowledge of the Nominating Committee that an opposition ticket, originating in New York, is to be placed before the Society on the ground that the candidates first selected by them, constituting an entire new board with the exception of the Secretary and Treasurer, was a reflection upon the past management.

"The committee most emphatically disclaim any such intention. Four of the original nominees have declined to accept, and the Committee have filled the vacancies by naming Messrs. Rowland, Greene, Hutton and Hamilton. These gentlemen having also declined, the Committee at this late day, in view of the constitutional requirement that one Vice-President and three directors shall be resident members, feel that no other course is open to them than to submit their ticket to the suffrage of the Society."

This is signed by Max J. Becker, Chairman, Don J. Whittemore and Rudolph Fink, Committee.

The opposition ticket is accompanied by the following circular:

"We desire to call your attention to the inclosed ticke[t]



THE WAGNER FREIGHT CAR DOOR.

for officers of the American Society of Civil Engineers for the ensuing year, and to ask for it your support. It is put forth purely in the best interests of our Society.

"As you will see, it is composed of members who have heretofore taken an earnest interest in the welfare and advancement of our Society, and of those who can be relied upon to give their time and thought to the important duties that must be performed by our board of direction, if the Society is to continue to prosper and advance."

This circular is signed by William E. Worthen, A. Gottlieb, Jr., C. Shaler Smith, Robert E. McMath, Charles Hermany, James Dun, Frederick W. Vaughan, William Metcalf, Geo. S. Morison, G. Bouscaren, Robert Moore, Joseph P. Davis, E. D. Leavitt, Jr., and others.

Wagner's Freight Car Door.

The Wagner car door illustrated this week is, so far as the door itself is concerned, the regular type of freight car door in general use throughout the country. The guide rails and fittings are novel, and it is in them that the invention consists.

The guide rails are bent in opposite the opening of the door, so that when the door is brought to the closed position it enters slightly into the opening, making the front end flush with the outside of the car.

The slides or guides on the back end of the door are fixed to the ends of a vertical rod a little longer than the height of the door. On both ends of this rod there is an offset. These offsets have plugs on them which fit loosely in the guides, and when the rod is revolved by means of the latch, which is welded solidly to it, these offsets act as cams, and push the back end of the door into the opening, so that it also becomes flush with the siding of the car the same as the front end.

The operations of opening and closing the door, and of sliding it back out of the way, are accomplished very simply and easily, and the use of the device involves but very little additional cost over the fittings in general use.

The door is held shut by a malleable iron lift piece attached to the vertical rod; this drops down over the latch and prevents the rotation of the same. The customary seal can be used in connection with this latch or with the hasp shown in the detailed drawing, fig. 5. This hasp permits the door to be locked in two positions; one absolutely closed, and the other nearly closed to allow for ventilation with certain classes of freight.

The following advantages are claimed for this arrangement: An easily operated and absolutely flush door is obtained, preventing the entrance of snow or rain, or of water running off the roof. Sparks are also effectually prevented from entering the car, which overcomes a very serious defect in the common type of freight car door, especially when cotton is carried. The inventor claims that this is the only absolute spark-proof door in existence.

The door materially adds to the finish of the car, there being no obstruction to the wind, or to the eye. It is not so liable as other doors to be torn off, or to rot or become mutilated at the edges. The customary cleating employed to cover up the space between the back of the door and the side of the car in all the common types of doors, is entirely dispensed with, saving an expense from this cause, and, what is more serious, the defacing of the car all around the door, so detrimental to the appearance of all box cars.

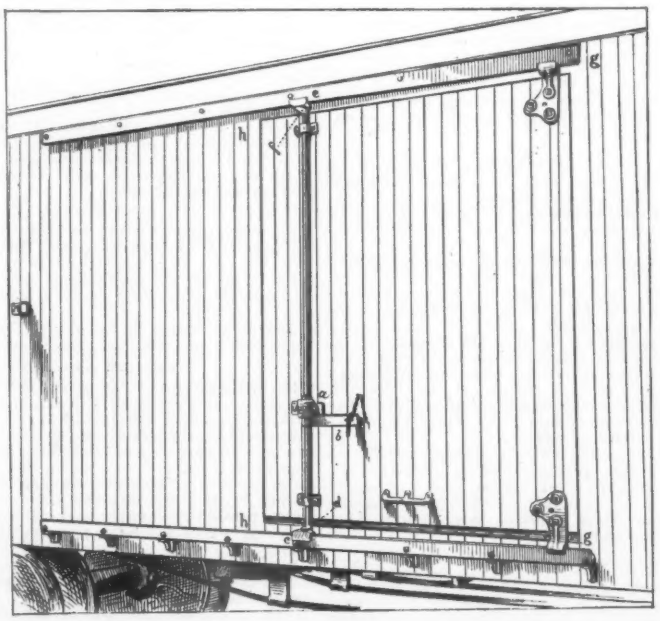
An additional very important advantage claimed for this invention is, that the door can be opened when the lading rests against its inner side. This is often a serious difficulty in the operation of the common door. It can be applied to all cars upon which doors are used, either small or large, to port-hole openings, and to baggage cars, at a cost very little above the old fittings.

It has been adopted by the Pennsylvania and its leased lines, by the Chesapeake & Ohio, the Great Western Dispatch, and the Erie & Pacific Dispatch.

Rights for railroad companies to use and manufacture it themselves can be obtained from the Wagner Car Door Co., of Indianapolis, Ind., enabling railroad companies to manufacture it for themselves.

In the accompanying illustrations fig. 1 represents the door and side of the car in elevation, fig. 2 is a vertical cross section, and fig. 4 is a plan. In all these views the door is shown shut, but fig. 3 shows the door open.

Detailed views are given of the principal parts in fig. 5, 6 and 7. Fig. 5 represents the vertical rod and handle by which the door is moved in and out of the recess in which it lies in the side of the car. Fig. 6 is the locking device, which secures the vertical bar in position and prevents any acci



THE WAGNER FREIGHT CAR DOOR.

dental movement. Fig. 7 shows the sliding pieces at the top and bottom of the door, which form the bearings in which the offset portion of the vertical rod revolves.

Horizontal Milling Machine.

Our engraving shows a new horizontal milling machine by Bement, Miles & Co., of Philadelphia. The general arrangement is somewhat similar to that of an ordinary planing machine; that is, with one upright on each side of a horizontally traversing table, and a crossbeam connecting the two uprights. In this case the milling carriage traverses vertically on one upright, while the crossbeam serves to unite it with the opposite one and also to support the cutter arbor. The machine can also be made double, when required, by adding another m lling carriage on the opposite side, traversing upon a similar upright and fitted with indepent gearing, so as to form, in that case, two complete milling machines placed at opposite sides of a single table. We may in a later issue illustrate a double machine of this character, and meanwhile will describe more carefully the single one.

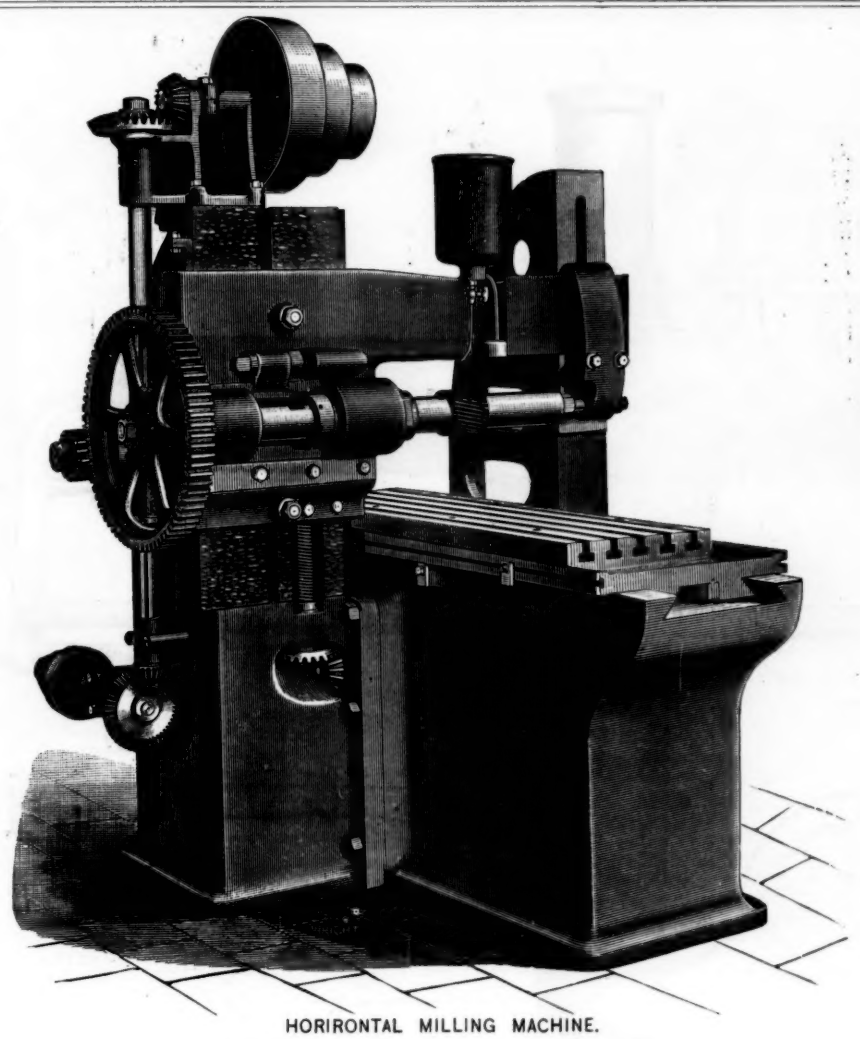
The bed of the machine is a substantial box casting on whose upper surface the "ways" are planed for the traversing table, which is slotted for securing work and is surrounded by a "soup tray" formed in the casting. The table and bed can be made of any required length to suit different lengths.

The motions of the table are controlled by a handwheel with rack and pinion, after the manner of a lathe carriage, and with the greatest facility, whether by quick hand movement or by automatic gearing.

The feed motion gearing is arranged with five changes and can be set to throw out instantly at any desired point in the traverse of the table.

The cutter spindle, of ample dimensions, has bearings adjustable for wear, arranged on a heavy slide with adjustment endwise for setting the cutters, which may be of any diameter up to 10 in. The outer bearing for the cutter arbor is movable horizontally for long or short arbors, and traverses vertically with the spindle. It is rigidly supported by the removable post on the other side of the machine, which can be taken away when desired, for facing or cross-cutting.

The driving works are treble geared and arranged with six changes of speed. The relation of the gears is not affected by the vertical movement of the milling carriage. The cone is stationary, requiring no arrangement for tightening the belt. All the adjustments can be made while the machine is running, and all the movements required in working can be easily controlled from one convenient position.



HORIRONTAL MILLING MACHINE.

Made by BEMENT, MILES & CO., *Philadelphia.*

Steel-Tired vs. Chilled Wheels.

This subject was again discussed at the regular monthly meeting of the Master Car-Builders' Club, held at 113 Liberty street, New York, on Thursday evening, Dec. 17.

The President, Mr. LEANDER GAREY, asked the wheel manufacturers if they do the best they can in the manufacture and in the use of available materials?

WILLIAM W. LOBDELL (Lobdell Car Wheel Co., of Wilmington, Del.): I came here to listen, thinking I could learn how to make a good wheel out of poor materials. We know how to make them out of good materials, and always aim to make the best article out of the best materials we can control. Bad wheels are not altogether the fault of the wheel manufacturers, but of the men who use wheels, and patronize those who make a poor article. The reputation of our wheels can stand on their service; but in many instances we do not get a remunerative price when we come in competition with some wheel makers who furnish a wheel at a very low figure. Rather than have an old customer taken away from us, we sometimes make wheels at cost. Experienced wheel makers know the character of the wheels they produce, but unfortunately, many who make the wheels have no practical knowledge of the business. They are dependent upon the skill of a foreman, of a manager or a superintendent, and railroad men should discriminate, and not buy wheels of persons who have no practical knowledge of the business.

R. C. BLACKALL (Delaware & Hudson): Wheels are better in quality now though the price is somewhat lower.

Mr. LOBDELL: Bush & Lobdell 25 years ago made better wheels than any made now. Some wheel makers have used anthracite iron, and finding it a bad material possibly have stopped using it and thus make a better wheel.

Wheels are too light, and have not been increased in weight for the far heavier cars. A 33-in. wheel for freight cars should not weigh less than 560 lbs., and would be better if it weighed 600 lbs. Passenger car wheels should be at least 600 lbs. to enable the wheel maker to produce the best wheel with the materials at hand.

President GAREY: When we first began to increase the carrying capacity of our cars to 20 tons, double the carrying capacity of our old freight cars, I called the wheel makers together and asked whether the weight of the wheel should not be increased, and with very few exceptions they considered the old wheel heavy enough. Not being a wheel maker I considered I was wrong in my calculations, but I find since that the weight of the wheels has gradually increased.

Mr. LOBDELL: Several years ago the Philadelphia, Wilmington & Baltimore and the Union and Empire Freight Lines paid the Lobdell Car Wheel Co. $1 a wheel over the customary price for an extra selected, extra heavy wheel, and I am satisfied that they made money by it.

Philadelphia, Wilmington & Baltimore Railroad. Statement showing mileage of all Lobdell wheels removed from passenger equipment from April, 1877, to July, 1881, inclusive:

Number.	Cause of removal.	Average mileage.
620	Worn out.	74,664
82	Slid after making *over* 50,000 miles.	
246	Slid after making *less* than 50,000 miles.	16,403
122	Removed to freight service.	37,457
2	Cracked braces.	91,357
1,072	All causes.	60,462

The wheels weighed 575 lbs. each. They were extra heavy wheels, chilled extra deep and were extra good in every other respect. The air brake was employed. The form of wheel used has a flange around the inside of and opposite the flange of the wheel, which adds materially to the strength of the rim of the wheel and prevents the expansion of the wheel when heated by the application of the brakes, which cracks the braces. It also enables us to give a better chill to the root of the flange.

The weight of 33-in. wheels now manufactured varies from 500 to 625 lbs. Few as light as 500 lbs. are used on passenger cars. Railroads make contracts for cars and do not specify the weight of the wheels. The car-builder, therefore, puts under as light a wheel as he can get the railroad company to use. If we consider the wheel too light for the service, we will not give the guarantee. We can make a 500 lbs. wheel that we are pretty certain will not break, but we will not warrant it to last as long as the 550 lbs. wheel, all things being equal.

Mr. GAREY: Some general managers state that good chilled wheels as made some years ago are cheaper and as safe as steel-tired wheels.

Mr. LITTLE: These gentlemen, however, invariably use steel-tired wheels under their own private cars.

Mr. W. W. SNOW (of Ramapo, N. Y.): I agree with Mr. Lobdell as to the quality and price paid for wheels. You cannot get a good wheel without paying a good price for it. The best wheels in the country cannot be made without the use of the best irons, which cost about $11 per wheel. You can guess how far a $10 or an $8 wheel will go toward the best quality. The best irons cost, say, $33 a ton. It costs to manufacture about 2 cents per pound, and the highest priced 600-lb. wheel that can be made of cast iron costs $12. Freight cars carrying 20 or 30 tons require as good a wheel as passenger cars, which do not carry more load than they did 10 or 15 years ago. We are now running on smooth steel rails with no lamination and consequent irregular hammering of the wheel. In freight service the brakes are applied on long grades, the wheels expand, and in the winter the sudden contraction after the cars get below the grades, breaks the cheap wheels, made with short-grained iron. The records of some roads given last year ought to startle every railroad man in the country as to the idea of using cheap wheels under freight cars. The iron in freight car wheels should be elastic, contracting and expanding without breaking, and can only be obtained for a high price. A good deal of charcoal is required to make such a ductile iron. Good wheels will stand rough usage. A good wheel weighing 550 lbs. will carry the load safer than many wheels made of a poor quality of iron, weighing 800 lbs.

President GAREY: Steel-tired wheels at the start have the advantage of being balanced, and can be turned round, and of the same diameter. The time is not far distant when all wheels, cast iron especially, will be ground or turned and balanced, making a vast improvement in the mileage, in the riding of the cars, in the comfort of the passengers, in the wear of the rails and the power required to move the train. Gradually we shall come to take more pains in fitting up all the running gear for cars—freight and passenger. It is very crude at present, and competition and low rates will drive railroad companies to do the best they can to reduce the expenses of running their roads.

Mr. CHARLES G. ECKSTEIN, ("Société Cockerill," Seraing, Belgium), exhibited a wrought iron driving wheel made of one forging. The spokes are elliptical in section, and after being roughed out the wheel is heated in a special furnace and welded and stamped at one heat under a steam hammer. Wheels of this description are used almost exclusively by the French railways, and are much employed in Germany, Austria, Belgium, Italy, Switzerland and England; and have been used on the Pennsylvania since 1876. The wheels are made under Arbel's patent.

Mr. C. A. SMITH (Union Tank Line) then suggested that the form of wheel tread which recently failed to secure the two-thirds vote of the Master Car-Builders' Association be discussed.

Mr. SNOW: I was at one time very much in favor of the shape and form that was presented—a cylindrical tread with the outer portion of the tread coned, and then cylindrical to the throat of the flange. When, however, I got into the switch business, I found this form of tread was destroying the point switches. Wheels would strike and rest upon the thin point instead of the stock rails, or main line part of the switch.

It is difficult to make this tread. We had 100 chills fitted up, and made several thousand wheels, but it was very difficult to prevent sweating in the throat. I cannot find a theoretical or practical way of getting over that difficulty. The old way of making the tread slightly coning, perhaps $\frac{1}{16}$ in., is preferable. Steel-tired wheels wear until they get two flanges in spite of having a slight cone, and would be worse with a parallel tread. The Lehigh Valley and a few other roads have sharp curves and no sharp flanges, but cylindrical treads do not prevent sharp flanges, for in the West where they have tangents 20 and even 100 miles long, they have more sharp flanges than the sharp curved roads. The truck, as it leaves the curve, strikes the tangent in a quartering position, and it will remain in that position until it gets to the end of the tangent, even if it is several miles long. Roads with sharp curves are not, therefore, as likely to get sharp flanges as straight lines. We want a conical tread to bring the trucks square in line on leaving the curve and striking the tangent.

Mr. LOBDELL: I consider $\frac{3}{16}$ in. is too great a cone to give the tread of a wheel. Sharp flanges are chiefly due to the manner the wheels are fitted to the axle and the axle to the truck.

If the hole is bored perfectly cylindrical and of uniform size throughout, if the axle is turned cylindrical, a wheel will not burst with a pressure of over 100 tons; but if the hole is not true and the axle is not true, 10 or 15 tons might burst the same wheel. It acts like a wedge. Some wheels fail by splitting from the hub outward. This is generally caused by bad fitting. We usually give a pressure of from 35 to 50 tons. We have furnished a road on the Pacific coast several thousand wheels and axles. The wheels are all bored to a standard gauge, and the axles are turned to gauge, and when they come together any two wheels must go on an axle. A wheel that will not stand 50 tons pressure should not be used, if the hole is well bored.

President GAREY: The cone of the wheel is insufficient to overcome the friction necessary to straighten the truck. The oscillation of the car will straighten the truck unless the friction on the side bearings is very heavy. The causes of sharp flanges are undoubtedly numerous and various. In any yard, you would have difficulty in finding three pairs of wheels of the same gauge, and each wheel an equal distance from the end of the axle. Wheels of four different gauges varying $\frac{3}{4}$ in., are often found under the same car. No wheel maker can produce wheels to wear satisfactorily under such circumstances. The calipering of the wheels in order to get them of the same size upon the same axle is not effectually done in most shops. Many take the marks the wheel makers put on the wheels as being the same diameter, and wheel makers know what that means.

Mr. LOBDELL: Cylindrical wheels were used extensively forty years ago, but were abandoned, being considered more liable to derailment.

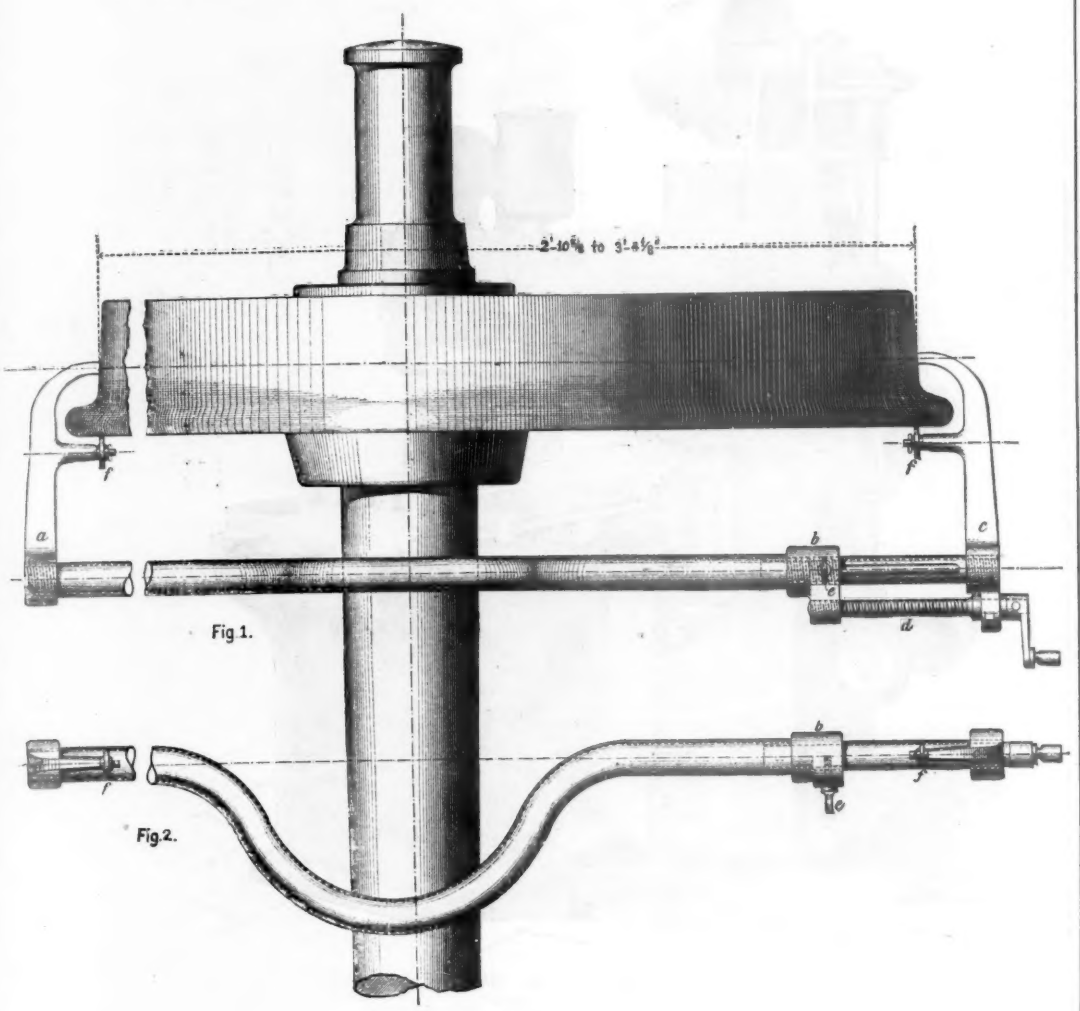
Mr. GAREY: A somewhat imperfect test shows that with coned wheels the flange often touches the rail on a tangent, and that this does not occur with a cylindrical tread.

Mr. LITTLE: Excessive coning will make a car ride badly, probably because the flanges continually strike the rails, first on one side and then on the other.

Mr. C. A. SMITH asked why axles should not be increased in size in the centre, or made parallel.

Mr. BLACKALL: We use the Master Car-Builders' axle increased $\frac{1}{8}$ in. diameter in the centre.

Mr. SNOW: Many roads are doing the same thing.



GERMAN WHEEL GAUGE.

Mr. GAREY: Axles should be increased in diameter in the centre to carry the heavy cars now in use.

Mr. BLACKALL: We have used some 4¼ in. axles with good results.

Mr. LOBDELL: No axles are equal to the old Bagnall axle imported from England. Iron may become granulous by vibration, but these axles showed the original formation after being nicked and broken after running several years. Axles are sometimes sound at one end and brittle at the other. This arises from the heater neglecting his duty during the night and allowing the fire to get down on one side, rendering one end of the axle granular while the other end is fibrous.

President GAREY: I was once standing by the side of a freight train when the engine was doing a little switching. Opposite to me a journal dropped off. I had it taken out and put in the smith shop. The blacksmith heated it and worked the iron and said it was the finest he ever saw. I said that could not be possible, as it had just dropped off and showed a very granular break. No journal that is heated enough to burn the waste and is cooled off with water is suitable for use again. The journal is heated by friction and bent by the weight of the car, and every revolution of the wheel alters the direction of this bending and finally makes a fine crack at the shoulder, which can be discovered by heating the axle. Nine-tenths of the axles in use will show a crack at the shoulder. That is conclusive evidence that a shoulder at the inside of the wheel is dangerous.

Mr. GEORGE R. MENEELY, assisted by Mr. JOHN GIBBONS, both of West Troy, N. Y., then exhibited a full size model of a Master Car Builders' journal box specially fitted in order to show, first, some interesting experiments on the present methods of lubricating; and secondly, an improved method of oiling. The box was pressed full of waste saturated with oil, as in service. The journal was then rapidly revolved, and it was noticed that the pieces of waste were drawn up around the journal, gradually creeping up under the brass.

Mr. MENEELY: If the axle were stone cold the waste would cling to the journal still more than it does now. It draws up all along the bearing, retarding the motion. The little filaments of waste seem first to cling to the journal and keep creeping up, finally getting under the brass, and that will draw up others behind it, and by and by it will get larger and then spread out, and in actual test when it is stone cold, running at 600 revolutions, or 60 miles an hour, the waste will creep up and in less than 5 minutes it will wipe the oil off. The little clots of waste tightly packed under the brass cause heating, which can be produced by friction alone, but the waste aggravates it. My experiments show that a little clot of waste under a perfectly well fitted brass will cause heating. Hot boxes are often caused in this manner. If the journal was hot the waste would not crawl up. Where bearings have considerable play at the ends, say from ⅛ in to ¾ in., the waste is apt to crawl up and finally wind round each end just like a spool. That of course would retard the motion, cause friction and make heat.

The improved lubricator takes 1½ pints of oil instead of 2½ quarts in the ordinary method of oiling, the Master Car Builders' box being used in each case. I use a small roller carrying a ring of lamp-wick instead of waste. The lamp-wick lifts the oil from the bottom of the box to the under of the journal, on the same principle as a grain elevator. The ordinary method of lubricating takes from 12 to 14 ounces of waste, which at 8 cents per lb. is 12 cents for waste. The first oiling of a 12 wheel car, with oil at 16 cents a gallon, will cost $1.92. With this device it would cost 60 cents. The saving is effected by a provision for preventing the oil running out behind at the axle hole. Through trains are oiled about every 200 miles, one gill being used at each oiling. This costs ½ cent per box per oiling, and for a 12 wheel car 24 cents for 24 hours' run. With this device you need not replenish the oil more than once in two weeks. In any mode of lubrication the oil will follow the axle arm, the centrifugal motion drawing the oil up. We cannot prevent the consequent waste of the oil working back on the wheel, but we do prevent the oil running out at the back immediately it is poured in. The lip in front is 1½ in. higher than the hole behind, so that when the oil is poured in, it must run through behind, because of the 1½ in. head which tends to drive it through, and we claim we save oil thereby. We use an oil deflector to prevent the oil from slopping out, and, as you see, it works very well. We have tried the lubricator with frozen oil, lard and melted lard. The lubrication started as soon as the box became a little warm. We are going to run this through the winter, and if we get the results from it which we hope, we shall try and sell some.

President GAREY: Mr. Meneely has solved the mysterious cause of the discoloration of journal bearings.

Mr. LOBDELL: You cannot turn a piece of wrought iron perfectly cylindrical. A perfectly round, cylindrical bearing can only be obtained by grinding. If journals are not perfectly round when new, they are apt to heat.

President GAREY: Formerly we ran all new journals a short distance in order to get them worn down smooth, and safe to run on fast trains. We are more liable to have hot boxes after the cars have been run a while. Probably the greater slackness of the brass allows the waste to creep up, especially when the brakes are applied or released suddenly.

Mr. LUCIEN BARNES (Rochester), then exhibited a vertical plane car coupler, consisting essentially of three parts—the knuckle, the locking bar, and the draw-head. Slack is secured, and the knuckle can be opened by a movement of a lever operated from the side of the car. Two pins are used, but no springs are employed. He also showed a model of a railway gate, all above ground, and so arranged that either one or two bars could be operated at pleasure.

The meeting then adjourned.

A German Wheel-Gauge.

Mr. A. Bretschneider, Superintendent of the Carnstadt shops, in the German *Organ for Railroad Progress*, describes an improved form of wheel gauge as follows:

The iron tube, 1.30 in. diameter, shown in the engraving bears on one end a caliper-arm *a*, and on the other a nut *b* screwed on it. The tube is bored out cylindrically, and carries a second smaller tube, of 1.08 in. diameter, which slides inside it. On this second tube is the other caliper arm *c*, provided with a small screwed spindle *d*, and a cranked handle by which the calipers can be adjusted to gauge wheels of different diameters, as shown on the engraving. The calipers *a* and *c* are held in the same horizontal plane by means of a bearing in the small tube and a set-screw *e*.

Two small friction wheels *f* determine the distance from the back of the wheel to that point in the tread at which the diameter is to be measured, and make the friction of the calipers easily felt.

Mr. Bretschneider commends this gauge for its lightness convenience, rigidity and strength, exhibited in its daily use. For car wheels it weighs about 11 lbs.

Foreign Railroad Notes.

The Russian Trans-Caspian Railroad, which would play so great a part in case of a war in Afghanistan, as might be expected, is not a money-making enterprise. It is 144 miles long, and in the first half of 1885 it earned $38,332, or $265 per mile. In that time it carried 9,620 persons in the military service and 6,121 other persons, and 363,977 tons of freight.

The Siberian Railroad, which was built over the Ural Mountains to Jekaterinenburg several years ago, has been extended eastward about 200 miles to Tiumen, and was to be opened to that place last October. Jekaterinenburg is only just over the mountain, a few miles into Asia, and the extension to Tiumen is the first Asiatic line of considerable length in Russia except the military railroad east of the Caspian Sea. There is a great field for railroads in Siberia, so far as territory is concerned.

Russian newspapers report that at the beginning of next year the government will purchase three of the most important railroads in the empire—the Warsaw & St. Petersburg, the St. Petersburg & Moscow, and the Moscow & Nishni Novgorod. The government heretofore has owned a few small roads of thin traffic, but it has guaranteed dividends on most roads in the Empire, and has to meet its guarantee for a very large number, the roads not earning enough.

For many years and until recently Greece had only one railroad, and that only 6 miles long, from Athens to its port at Piræus. An extension of this line to Corinth, about 55 miles, was opened April 1 last, and now a further extension of 12 miles on the way to Patras, is opened. This would have been right handy some 2,500 years ago for Athenians visiting the Olympian games. Another, with the classical name of "Corinth, Argos & Nauplia Railroad," is nearly ready for traffic.

The Prussian Minister of Public Works has issued a decree against baggage-smashing, which, he says, is as often due to lack of skill as to carelessness, wherefore he admonishes the railroad officers to see that the baggagemen are instructed in the art of handling baggage properly, and especially to let them know that certain kinds of baggage must not be dragged or thrown but carried on wheels or moved by levers.

There has recently been constructed in Berlin a large union depot for handling dutiable and taxable goods. The arrangements for forwarding such goods in transit and collecting the duties at the point of delivery are so complete that a great deal of business of this kind is done at Berlin instead of at the frontier. Last year the duties collected at Berlin amounted to one-eleventh of the whole customs revenue of the German Empire.

It was necessary that a station of this kind should be near the centre of the city and should have a water-front. It could not, therefore, be made very large; and it was necessary to arrange it in such a way that the whole space could be utilized to the fullest extent, and so that goods could be handled rapidly. Special care had to be taken in the construction of the tracks, because so large a part of the station was built on ground artificially filled in, and therefore liable to sink. The track was laid with an inner rail throughout the whole extent. It was laid in asphaltum, supported by iron sleepers and ballasted with granite. The weight of metal per yard of track was from 280 to 400 lbs. The station contains about three miles of track.

The surface available for storage is only about 20,000 square yards. To utilize this to the utmost, there is a very complete system of cranes—25 of them operated by hydraulic pressure. Every effort has been made to economize the use of water, and it is estimated that 100 cubic yards per day will suffice for the whole. The cost of the hydraulic apparatus was about $85,000.

Proposed New York Underground Railroad.

The engravings herewith illustrate the latest of the many plans devised for a railroad underneath Broadway, those of the new "New York District Railroad Company," which was incorporated and made public its plans this week. Whether or not the company has any certainty of overcoming the financial and legal obstacles to the completion of its project remains to be seen. As a design, the plan has some interest.

The most noticeable peculiarity of the design, as shown in the engravings, is that, while preserving the more essential features of the old "arcade" plan, which has been born and died so many times, it avoids carrying the arcade back to the face line of the buildings and the addition of a subterranean sidewalk parallel with the railroad tracks. As crossing of the tracks could not be permitted, this proposal excited great opposition, owing to the fact that the space under the sidewalk in front of almost every building is occupied by valuable vaults. In some cases these vaults encroach upon the street as well, but not to any great extent nor in such numbers as to make them a considerable obstacle to the success of a plan which simply uses the space from curb to curb.

This space is, for the entire length of lower Broadway, 44 ft., which it is proposed to divide into four central galleries, about 8 ft. wide in the clear, and two side galleries for water, sewer and gas pipes, pneumatic tubes and telegraph and telephone wires. Broadway being on the backbone of the island for almost its entire length, there are few or no large main sewers to be provided for, and it is claimed that the space

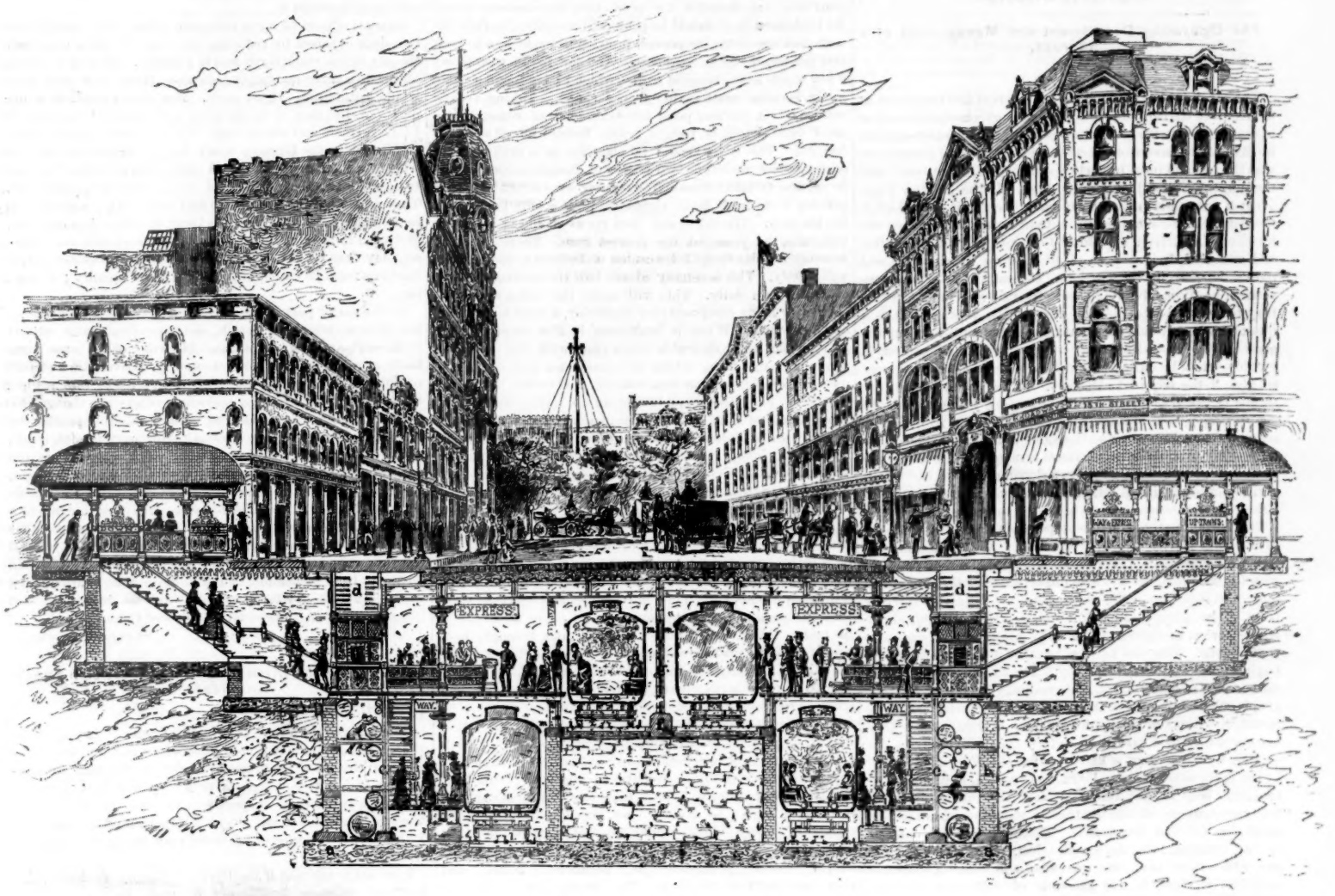


Fig. 1.—NEW YORK DISTRICT RAILROAD.—STATION

allotted is ample for all present and future requirements. Electric light wires are to be carried in the hollows of the buckle-plates which support the roadway, to avoid induction.

The proposed route is from the southerly end of New York island at the Battery, directly up Broadway to Madison Square, at Twenty-third Street, where it is proposed to branch, one line continuing up Broadway to the southwest corner of Central Park, with the purpose of eventually extending up Eighth avenue, and the other branching off eastward, and following up Madison Avenue "to and under the Harlem River" to a connection with various lines in the "annexed district" of New York. A cross-town line through Fourteenth Street is also projected.

Of the four galleries in the sub-way, the central ones are to be given up to express trains, making stops only at long intervals, and the two outside ones to way trains, making frequent stops. This has been a leading feature in all plans for Broadway underground lines.

The company proposes to excavate the street in sections, providing for travel during construction by a system of movable bridging. In general, a uniform platform of concrete, *A*, Fig. 2. about 2 ft. in thickness, floored by a half inch of Trinidad asphalt, is to extend across the street at a maximum base depth of about 17 ft. and form a foundation for the whole structure. Upon this is to be erected the external vault wall *B*, fitted during construction with connections for gas, water, etc., at every house. The pipe galleries come next, adjacent to both curbs.

The internal wall supporting the galleries is formed by iron columns *E*, 4 ft. apart, and coincident with those forming the outer wall of the "way" galleries. The four galleries *G* are formed by five rows of columns 4 ft. apart longitudinally, filled in with panels of a material designed for this special purpose, and making each gallary a close tunnel. The roof is supported by long, unbroken beams *I*, 4 ft. apart, extending entirely across the street from curb to curb, 44 ft., bolted to each of the five intermediate columns, with ends in the vault walls. On these beams is laid the steel 10-inch span buckler-plate roof *K*, covered with a 2-in. skin of asphalt and then by 6 in. of concrete, on which latter the pavement is to be laid.

The galleries form open cylinders from station to station, and as the trains nearly fill them they constitute loose pistons always moving in the same direction; the effect being to establish a ventilating current, dependent for its force upon the approximation of cross-sections, the speed of the trains and the integrity of the tunnel. Electricity is proposed to be used as a motor, reducing the requirements of ventilation to a minimum. The traffic rails, the electrical-conductor conduit *L*, and the guard-plate are to be bolted to the same steel tie, the tie being permanently set in the concrete foundation.

It is proposed to make the cars without side windows, lighting by electricity. Owing to the narrowness of the sub-ways, wide cars cannot be used, and the seats will face inward as in street cars.

One of the two proposed plans for express stations is shown in fig. 1, the way tracks being depressed to a total depth of some 24 ft. 2 in. below base of rail, or about 9 ft. lower than the normal depth, so as to permit a platform giving access to through trains to be carried over the way gallery. Another plan is to sink all four tracks some 6 or 8 ft., leaving room for a foot walk to be carried over them. These provisions are required only at the infrequent points where express trains stop. Way stations require only a platform at the side of the outer galleries, with no disturbance of level of the rails.

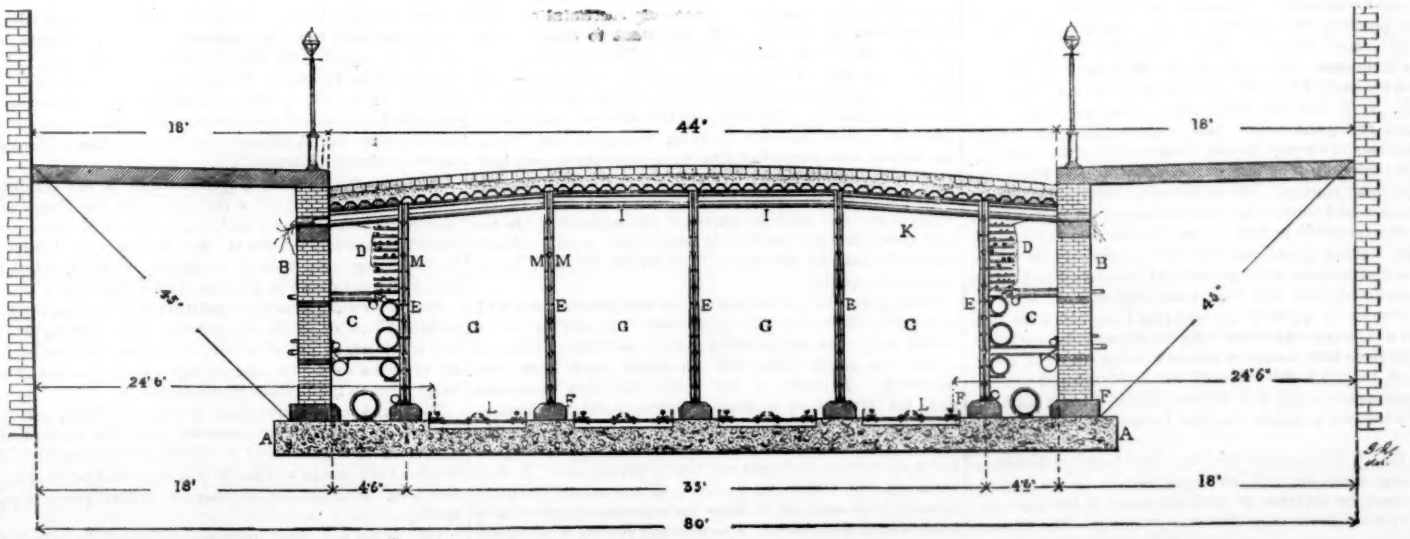


Fig. 2.—NEW YORK DISTRICT RAILROAD.—SECTION OF PROPOSED BROADWAY TUNNEL.

Contributions.

The Operating Department and Management of a Railroad.

IV.

The car department so far has not received fair treatment at the hands of the railroad world. It has been considered a sort of sick sister tied to the motive power department, which appears until lately to have worked on the idea that the locomotive was the one and only important feature of a railroad, and that anything would answer for a car. In the last few years great improvements have been made, the credit for which is more due the car-building firms than to railroad officers, the former being driven by competition into employing skilled and educated designers, so as to improve appearances and reduce expenses in construction. The outgrowth of this competition has been advantageous to the railroads and satisfactory to the traveling public. It should be kept up. It is a question whether this department is not of sufficient importance to be looked after by a separate staff officer, but it would seem to be quite possible for the mechanical engineer to give it the required attention. However, the same care should be taken in selecting and educating young men as in the motive power branch. They should come from pretty much the same schools, and the same inducements should be offered in one as the other. There is no question as to the advisability of separating these two departments so far as the division organization is concerned; the one man in charge of either has quite enough to do to keep it in proper trim.

The Train master should be a person thoroughly educated in the train service system of the road. As a rule, the dispatcher's office is the proper and most satisfactory place to look for such men, as it is also important that they should be telegraph operators. We will, therefore, take the starting point of the operator, as he interests you through your entire train service, and gives you a large percentage of your station agents. The care here, as in other departments, should begin in the selection of the boy. The agents may be taken into service in many ways, and gradually drift into the telegraph offices, but most of them get in as office boys, callers, agents' assistants at small stations, and in many cases they become quite good operators before they are really in the service, by being what is known as the agent's student—that is, the agent allows him to learn what he can, apparently for the little help he can render around the station; but the true inwardness of the matter is that the agent gets a small fee for the instruction. This is not to the interest of the company, as the agent selects the boy who can pay $10 rather than the one who will make a desirable employé, if there is any question of difference between them. Having these and other channels to draw from, they should be nursed and properly assisted. The office boy and caller as a rule are in cities or large towns, and the most care should be given in selecting them. The majority of young operators are country boys—and are brought into service through the station agents, and as a rule make the most valuable men. The agent should be allowed to employ at least one, where the station receipts and business will justify it. Where they will not, he should be allowed to have the student, if a desirable one lives near by, free of all expense to the boy, and with the understanding that he is to be taken into service as soon as he may be desirable and there is a vacancy that he may be entitled to by the length of his apprenticeship. Some officers object to this system. They are foolish to do so. They forget that this is a valuable mine to draw upon. If the agent is a proper person, he can easily educate the boy and keep him in the traces. If he cannot manage one boy, how is he to manage the company's affairs, however small, which are so much more important and trying? and the sooner he is gotten rid of the better. The boy educated about the station, made station operator, dispatcher's operator, dispatcher, chief dispatcher, and then Train-Master, will have had the best possible opportunity to be fully instructed and capable of handling the train service of the division. Many will be found wanting as they travel this line of promotion, and may never reach the top step, but will make good agents for large or small stations; if they are worth keeping at all.

The General Yard master will most likely be taken from the freight conductors. The yard service is very rough and seldom produces men worthy of very much promotion or men that could stand it. Still I am under the impression that a little more care in regard to this branch of the service on the part of the officers would produce very desirable results. It is left too much alone. Good assistant yard-masters and yard masters can be gotten from the freight service, should the pay justify their accepting the positions, and through these men the rougher class of switchmen can be kept under control. The writer once started out bravely to have a model yard, with none of that gentry in it. However, he soon found he had to ask them in as a favor. The men he wanted would not cut and couple cars in yards. They would take any other jobs offered, but as soon as the yard was mentioned, they said, "good morning, sir," and left. We now come to the question of selecting those under the class known as officers—prominent officers at least; for each person who has a title I suppose claims to be an officer of a corporation, though I fear some of our full-feathered general superintendents would feel injured should a track foreman classify the two positions together by saying "we officers," etc.

The theory of employing the boy still holds good—rather the young man—through all departments. In the shops as apprentices, on the train as brakemen, and in the track service as young laborers in the section gangs. The firemen should come from shops and round-house boys. In the shops, if quick, bright and otherwise worthy, they are entitled to your first consideration for promotion as vacancies occur. As brakemen they should be promoted according to their deserts and age, from the poorest position as brakeman to your best passenger run as conductor. And just here I wish to say a few words as to classes of trains, which I have found assisted me in keeping matters in proper shape. Taking freight service as the starting point for trainmen, all roads should have two classes of freight trains, besides mixed and way freights. The latter should be classified as to rank next the passenger service. The two classes of freight proper, should be regular freight trains and irregular or extras. This has nothing to do with train rights, etc., but is only for arranging the men. The oldest and best crews should be given the best runs, the youngest the poorest runs. There should be as many regular freight trains on a division as the business will justify. This is usually about half the average number of trains run daily. This will make the following steps, each crew being composed of a conductor, a head or flag man and brakeman. When a brakeman is first employed put him on the least desirable extra run, with the youngest conductor, excepting where the conductor has one green man already. Then put him with the next crew. As vacancies occur, move this green brakeman up, step by step, behind those ahead of him, until he has reached the best regular freight run as oldest brakeman. Then promote him to be head or flag man. Let him begin the ladder again in this position—just as he started, with the young conductor on the poorest extra run. He now climbs the ladder in this position, and on reaching the best freight run, it would be well to change him over to the passenger service. Let him serve a little time as "third man" or rear brakeman. This will take off a little of the freight roughness and give him some idea of passenger service, at the same time give the passenger conductor a man with more intelligence and more at stake than the usual passenger brakeman to help him take care of his train. After this school has been gone through, he is prepared to be made a conductor, and should then start at the bottom of that line and work his way up through each branch of train service until he reaches the best passenger train on the division, should vacancies permit.

On paper, this looks longer than the road to Jordan, but in fact it, or parts of it, are sometimes made shorter than is really required for instruction, so many changes occur, partly through the men changing round from one road to another, partly through failures to pass necessary examinations, and last, but I regret to say not least, through discharges for causes of many kinds. Men do not object, so they get what they call "square" treatment, which simply means promotion as vacancies occur and they are entitled to them. The strong line should be drawn on brakemen; that is, no man should be promoted above that rank who does not promise well for a future conductor. This line saves many troubles later.

Now as to the importance of the two classes of freight men. You have in reality separated your men into two parts, which in times of trouble you will find, as the writer has, to mean the same difference that formerly existed between the freight and passenger men—a difference which means much to a superintendent. It is not a good subject to discuss too freely. Still you may always count on one thing: your regular men will stand by you; if not, your extra men ask nothing better than their places.

This whole system should be carried through as above stated; that is, your freight men should be promoted to your passenger service. On some roads passenger conductors are made from passenger brakemen or baggage-masters. In comparing the number of accidents that occur on roads using these two different systems of promotion, I find that the passenger brakeman or baggage-master conductor has three to one on the roads which promote only such men as have been properly educated, and I am astonished the difference is not greater. The regular passenger brakeman to-day is little more than a porter, and the baggage-master's position is the only one he has any claim to be promoted to, either by hardship or education, if he is worthy and has the muscle. That is where he belongs.

Firemen give the greatest satisfaction when taken from the shops and round-houses as very young men and boys. Machinists, brakemen, and other employés, who are generally older when they begin, are not as a rule successful or satisfactory, and usually get tired and want to change back. The ten tons of coal consumed by a consolidated engine on a long freight run is not a pleasant thing to contemplate day after day, and the older a man is when he begins, the shorter the contemplation. The boy from the shop or round-house has not learned the easy tricks of the trade, and having started out with an exalted idea of a locomotive, gets half-way through his firemanship and into easier service on, say, a passenger engine, before he discovers what work he has really done; and when he arrives at his engineerhood he has only gotten his just deserts, all things being equal. If any one doubts this, let him try it. The writer has, and knows whereof he speaks.

Not long ago the writer had quite a long conversation with a very big officer of a very small road. The gist of his remarks was, that organization was a necessary thing, of course, on large roads, but on small roads none was necessary. I made up my mind that this gentleman and his kind were a strong factor in the calculations of such roads as are small—and do not pay. The smaller and less successful roads need good organization more than the larger and better-paying ones. It does not necessarily follow that because you have matters properly arranged you must needs have an experienced officer as a head to each department. One man can run the whole much better, properly organized, than he can one all chaos. Common sense dictates this, though some people don't seem to be able to understand it.

General officers of large railroads often issue instructions to reduce expenses by reducing the rate of pay, especially the pay of the track force and in summer. Should a young officer do a correspondingly ridiculous thing, how soon they would lecture him—if not more. Don't these gentlemen understand that they drive the good and desirable laborers off to the farmers and retain only old men and boys in their service whom the farmers won't have? Better do as they would on their own places. If they could not afford to hire two good men, they would let one go and keep only one. They would hardly let both go and take on two useless men in their places because they got them for 10 cents a day less. With the railroad it is the same. Four good men are better any day than six poor ones. Always reduce numbers if reductions must be made, but never reduce quality; it don't pay.

As the major part of the success of railroading depends on the close watching of details, don't overload your officers with work and responsibilities. He will neglect some thing badly or all a little; either costs money. Give him a chance to think and improve matters. Don't make him neglect them. Give him time to see what others are doing. No company can invest money to greater advantage than by sending their officers on occasional trips over foreign roads, giving them time to see, and to talk. You may rest assured some of them will bring some good points home with them. Railroad men, as a rule, are not given to wasting their time. They seldom take much interest in anything outside of a road, and any one who has tried to engage one in some other kind of conversation generally gives it up as a bad job and lost time. No set of men in the world are more deeply in love with their profession, or put in more long hours of hard work. They should be given all the little recreation and pleasure that can be consistently allowed them.

SUPERINTENDENT.

Subordination of Division Officers to Division Superintendent.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Referring to the letter of "Superintendent" in your issue of Dec. 4, I presume it is not out of order to point out some of the objections to his proposal to give to division superintendents the entire charge of motive power and maintenance of way on their respective divisions. First, as to the case which he cites of the Division Superintendent who could not get a switch engine at his order upon the Division Master Mechanic.

It occurs to me that if the Division Master Mechanic had possessed ordinary intelligence he could have notified his superior, the General Master Mechanic or Superintendent of Motive Power, of the Division Superintendent's request by telegraph, asking his advice about sending the engine; and by the time the engine was ready to go out an answer would certainly have been received, either directly from the Superintendent of Motive Power, or in his name from his secretary or assistant at his office.

"Superintendent" says that "if the Division Superintendent is not fit to control his motive power, he should be relieved, and some one who is appointed in his stead;" and the same argument applies if he is not competent to direct the work of maintenance of way. "Superintendent" does not mention the repairs of bridges and buildings, but it may be presumed that he believes the Division Superintendent should have charge of them also.

Now, it is a safe proposition, which "Superintendent" will scarcely dispute, that the man who controls any work should know at least as much about it as those working under him; otherwise, his men will impose on him. This applies as well to maintenance of way as to repairs of bridges or machinery. Maintenance of way is one of the most important railroad expenses, and to quote your editorial in the *Railroad Gazette* of Dec. 4, "is an indeterminate item, having no natural limit in either direction;" hence, the importance of having men control it who thoroughly understand their business, and are not obliged either helplessly to accept the opinions of their foremen, supervisors or roadmasters, or arbitrarily to give orders which they are incompetent to demonstrate to be correct.

The average Division Superintendent is a man who has been promoted from the position of clerk, operator, conductor or agent, and who, previous to promotion, had no experience in the work of maintenance of way or motive power. How such a man is suddenly to become inspired with the knowledge of their respective businesses equal to that possessed by the Roadmaster or Division Master Mechanic passes ordinary understanding.

If, then, the Division Superintendent is not competent to direct the carrying out of the orders of the Engineer of Maintenance of Way and the General Master Mechanic, why should such orders be sent through his office, as "Superintendent" suggests, instead of directly to the Resident Engineer or Roadmaster or Division Master Mechanic?

The only results of such a repetition of orders appear to be additional cost of clerk or operator's hire, sending two letters or telegrams instead of one, the chance of error and delay in such a repetition, and perhaps a slight increase of self-importance in the Division Superintendent.

The Division Superintendent, however, probably is a capital man to direct those connected with the movement of traffic, and if so, he should be employed to do that only on a division long enough so that he will have no time to spare to direct the maintenance of way or motive power departments.

This is the age when men are proficient in only a few branches of knowledge. Formerly the Chief Engineer located

the road, designed the bridges, buildings, engines and cars, making them all very expensive, and the Division Superintendent was supreme on his own division—hence his name; but the tendency of the times is to change this, and instead have heads of departments, each an expert in his particular branch and all the heads under a General Superintendent or General Manager, to whom they can report intelligently, and who is, or should be, an expert in at least one department, preferably the traffic management, with a sound, practical knowledge of the others.

Of course, under this system, there may, and will be, cases of friction between different departments intending to correct abuses in either, but the discipline and economy which it makes possible must far outweigh any good objections which can be urged against it. ROADMASTER.

TECHNICAL.

Locomotive Building.

The New York Locomotive Works in Rome, N. Y., are building three heavy ten-wheel freight engines for the Rome, Watertown & Ogdensburg road.

The Baldwin Locomotive Works in Philadelphia recently delivered several new and heavy passenger engines to the Richmond & Danville road. They have recently taken a contract for 16 locomotives for the Chicago & Indiana coal road.

A Chicago dispatch says that the Chicago & Northwestern Co. has out an order for 30 new passenger locomotives and the Chicago, Milwaukee & St. Paul one for 40 locomotives, both freight and passenger.

The Car Shops.

The Harrisburg Car Co. in Harrisburg, Pa., has received an order for 250 freight cars for the Delaware & Hudson Canal Co.

The St. Charles Car Manufacturing Co. in St. Charles, Mo., has received an order for 12 cabooses, 100 box, 200 stock, 150 flat and 250 coal cars for the Atchison, Topeka & Santa Fe road.

The New York Central Sleeping Car Co. has ordered 48 sleeping and 15 parlor cars, which are to be built at the Pullman Car Shops in Pullman, Ill.

The LaFayette Car Works in LaFayette, Ind., have taken a contract to build 750 freight cars for the Chicago & Indiana Coal road.

New orders reported for cars, besides those already noted, are 1,000 for the Chicago, Milwaukee & St. Paul; 12 passenger, 12 parlor and 1,000 freight for the Chicago & Northwestern; 700 freight cars for the Louisville, New Albany & Chicago. The Union Pacific is asking bids for a large number of freight cars.

Iron and Steel.

The St. Louis *Age of Steel* announces that the Western Co., lessee of the Vulcan Steel Works in St. Louis, which has been making steel clasps, billets and blooms, has decided to start up the rolling mill also. This will be the only mill making rails outside of the existing combination of rail makers.

The E. & G. Brooke Iron Co. in Birdsboro, Pa., have contracted with J. P. Witherow & Co., of Pittsburgh, to furnish a second steel converter, of the pattern already in use, with the necessary crane and other machinery.

P. L. Kimberley & Co. have begun the erection of a second stack at their Etna furnace in Newcastle, Pa. It will be one of the largest furnaces in Western Pennsylvania.

The Thomas furnace at Niles, O., will go into blast very shortly.

Messrs. Barrows & Co., No. 64 Broadway, New York, have just sold to the Texas & St. Louis 2,500 tons new steel, 56-lb. rails, with necessary fastenings. These are to go from Pittsburgh mills, and with former lots sold by same firm to this road make a total of about 9,000 tons since September last. This road will shortly widen its gauge and relay its track with new steel rails.

The Laclede Rolling Mills have started three more puddling furnaces since going into operation, and have between 125 and 150 employés at work. Two furnaces are employed on the plate and one on the sheet train, day and night. They are running on orders, too, not on stock.—*St. Louis Age of Steel.*

The new furnace of the Iron River Furnace Co. at Florence, Mich., is nearly ready to go into blast. In this furnace the ore will go directly from the mine to the furnace, the mine cars dumping it into the furnace mouth.

Manufacturing and Business.

The E. T. Barnum Wire & Iron Works, it will be remembered, went into the hands of a receiver in the spring of 1884, owing partly to internal dissensions among a few of the stockholders. Arrangements had almost been completed for reorganizing the company and relieving it from its embarrassment when, on Dec. 3 last, the works, which were among the most extensive and complete of their kind in the country, were destroyed by fire. Mr. E. T. Barnum, who first started the works about 20 years ago and who was President of the company when it was organized and the business was transferred to it, now announces that in spite of all these troubles he has made arrangements to fill orders for iron and wire work, and intends, as soon as possible, to get the business into running order again. All communications should be addressed to E. T. Barnum, Detroit, Mich.

The Mississippi Glass Co., in St. Louis, is now prepared to furnish skylight glass and also colored glass of assorted colors for use in cars, of any size usually required.

The Rail Market.

Steel Rails.—A number of transactions are reported, and prices are firm at $35@36 per ton at mill at eastern mills, the western mills asking a somewhat higher price, as their nearness to western markets enables them to do.

Rail Fastenings.—An increasing demand is reported, and prices are firm. Spikes are quoted at 2.15@2.25 cents per ton in Pittsburgh; track-bolts, 2.60@2.85 cents, and splice-bars, 1.65@1.75 cents.

Old Rails.—The market for old iron rails is unsettled, and holders, in the presence of a short supply, are asking more than purchasers are willing to give. Quotations vary from $19.50@21 per ton at tide-water, with few actual sales reported. Old steel rails are quoted at $19@20 per ton in Pittsburgh.

Engineers' Club of Philadelphia.

A regular meeting of this club was held at the rooms in Philadelphia, Dec. 19, Past President Henry G. Morris in the chair; 59 members and two visitors present.

A report was presented by Mr. E. L. Corthell, the delegate to the Convention of Civil Engineers held at Cleveland, Dec. 3-6, on the Status of the Civil Engineering Profession on National Public Works of a civil character. The report included the proceedings of that convention, a summary of which has been heretofore published.

The club voted its thanks to Mr. Corthell for his services as delegate, and also voted in favor of the selection of a permanent Committee on Public Works by the board of directors.

Mr. Thomas C. Clarke, through Mr. Thomas M. Cleemann, presented an account of the impressions gained by him last summer during a visit to the Forth and Tay bridges, supplementing his descriptions by sketches showing the positions of the erecting scaffolds for the first named structure, and the method of building the piers of the second of plate-iron filled with beton and loaded with pig-iron to twice the greatest load that they will ever have to support, before the weight of the superstructure is imposed on them.

Mr. John T. Boyd presented, for the Brooks Locomotive Works, of Dunkirk, N. Y., two handsomely framed photographs of locomotive engines.

The Secretary presented, for Mr. S. P. Mitchell, Tables for Finding Ordinates to Circular Arcs, for the *Reference Book* of the Club.

A Wooden Railroad.

The Pratt Saw Mill Co., which has a logging road about 10 miles long, extending from its mills at Verbena, Ala., is now building an extension of 4 miles, which is to be laid with wooden rails made on a pattern devised by an employé of the company.

The Western Steel Co. and Steel Rails.

We are glad to announce that the Western Steel Co., lessee of the Vulcan Steel Works, of this city, has determined to start the rail mill in the near future. For four months past these works have been running on a product of slabs, billets and blooms. The work of putting the rail department in shape for active operations is being pushed and everything will soon be ready for starting up. This department was closed down in February, 1884, when the price of rails receded to a figure very close if not below the cost of production. For three months past the rail market has shown great activity and there are many indications of further improvements in demand and price. The Western Steel Co. is not a member of the combination which has for its object the restriction of the production of steel rails, and will therefore be free to dispose of its output as its managers find best for their interests. The starting up of the rail department will give employment to a considerable number of men, and will not be without its effect on the ore market.—*St. Louis Age of Steel.*

A Grain Elevator on a New Plan.

The Cleveland (O.) *Plaindealer* thus describes an elevator recently built in that city on a new plan: "It was invented by Mr. Lyman Smith, a Kansas City man, and will probably be towed to Buffalo for use in that city. It is a floating elevator and is intended to transfer grain from vessels to canal boats at a much cheaper rate than is now charged. The old elevators work on the belt and bucket plan. This sucks the grain up by exhausting the air. It goes up at the rate of 60,000 bushels per hour into a large hopper, and it is claimed that the process of elevating the grain also cools and purifies it. This hopper having been filled with grain, the whole hopperful may be weigned, for the entire arrangement rests on large but delicate scales capable of weighing 60 tons. Then the grain is blown down into the hold of the boat for which it is intended. This elevator has already been tested and does its work.

"It cost $20,000, and it speaks well for Cleveland manufacturers that foreign capital came here to build it. It is provided with the finest steel boiler, which is beneath the projection to the left of the hopper. The cabins at either end are furnished elegantly, the one at the right being for the weighmaster. There are in the holds small bins for limited amounts of grain, although the elevator is not calculated for storage purposes."

Proposed Electric Railroad in Chicago.

The Van Depoele Electric Railway Motor Co., of Chicago, has been incorporated, with a capital stock of $500,000. The incorporators are Lucius Clark, William A. Stiles and John Easau. The company intends to demonstrate to the people of Chicago that an elevated railway can be so constructed as to remove most, if not all, of the objections raised against elevated roads. To do this it proposes to erect a sightly structure, suspended between crossings by an iron lattice-work structure supported at the crossings by towers surrounded by electric lights. The electricity, by which the cars will be run, will do away with smoke, noise and dirt, and give rapid transit.—*Chicago Inter-Ocean.*

The Basic Steel Patents.

The Cleveland *Iron Trade Review* says: "The litigation which has been pending for the last six years between Jacob Reese and other claimants in regard to the priority of the Basic Steel Process patents, is now rapidly drawing to a close. There have been about 15 decisions, all in favor of Mr. Reese, and now, after a tedious and expensive trial of years, the Commissioner of Patents has decided that in the case 'Reese *vs.* Thomas—Basic Furnace Linings,' the question of priority of invention is in favor of Jacob Reese," the decision being dated Dec. 16, 1885. This gives Mr. Reese entire control of the basic process in this country for the next 17 years, and annuls the Thomas patent, which he sold to the Bessemer Steel Co. Limited."

Fire-box Stay Making Machine.

Messrs. Collier & Co., of Salford, have in hand several specially designed machine tools, a short description of which will be of interest. One of these is a combined machine for making copper stays for locomotive boilers. This machine combines the processes of sawing off the required lengths from the copper bar, rolling and centreing, squaring the ends and finally chasing the stays. It consists of a strong bed, fitted with the various apparatus, first for sawing the bar of copper, with chuck to hold it in position and an adjustable stop to regulate the required lengths; then an apparatus for squaring the ends, with headstock having a spindle carrying milling cutters, chuck to grip the stay, measuring stop to regulate the length to be squared, hand feed, with adjustable stop to prevent feeding too far in, and a division plate and stop to turn the holding chuck a quarter turn to set out for the second two sides to be cut. For rolling true and centreing the stays the apparatus consists of two stationary and one adjustable rollers, suitable for different diameters of rods and centreing drill, to centre the ends whilst the stay is being rolled. For the chasing process the machine is fitted with a lathe with carriage and compound rest, hand motion to open the double clamp nut and at the same time draw the tool back, and balance weight to slide the rest along the bed instantaneously into position for the next stay to be chased. There is complete overhead driving gear for each operation, so that each process is entirely independent, and all or any of the operations can be performed either simultaneously or separately as desired.—*London Engineer.*

Twenty-inch I-Beams.

The New Jersey Steel & Iron Co. of Trenton, N. J., has issued a very neatly arranged sheet, showing the various sections of iron rolled in their mills.

This company is the only maker of 20-in. I-beams in this country, and states that these beams have not only nearly double the strength of the 15-in. patterns, but also have more strength per pound of metal. They are therefore, preferable to the 15-in. where spans or loads are large, and will take the place of riveted girders in many cases where the latter have been hitherto required. For stringers of railroad bridges they are well adapted. Extra heavy machinery enables these beams to be rolled with exceptionally wide flanges, which materially increase the strength, especially when the beams are unsupported sideways. The 20-in. beams being kept in stock, can be furnished without the delay incident to the construction of plate girders.

THE SCRAP HEAP.

A Locomotive for the National Museum.

The Pennsylvania Railroad Co. has presented to the National Museum at Washington the old locomotive "John Bull," and it has been placed in the hall of the Museum. The "John Bull" was built by George Stephenson in England, and was the first locomotive used on the Camden & Amboy Railroad, having been put on the line between Bordentown and South Amboy about 50 years ago. The road had then been completed between these points for some time, but had previously been operated by horse power. The "John Bull" remained in service for a number of years, and when finally superseded by more powerful machines it was placed in the Camden & Amboy shops at Bordentown and carefully preserved. When the New Jersey lines were leased to the Pennsylvania Railroad it still remained in the shops and was exhibited by that company at the Centennial in Philadelphia.

Giving Information about Accidents.

The Massachusetts Railroad Commissioners, in answer to a letter of inquiry from the General Manager of one of the Boston roads, have issued a letter in relation to the duty of railroad officers to passengers in case of accidents to trains. The Commissioners say that while a company and its agents and officers are not required to inform passengers fully of the nature or extent of damage caused by an accident, and while they are not, of course, under obligations to give information which they do not as yet possess, it is nevertheless their duty to give all possible information as to the immediate consequence of the accident and the probable delay involved to trains. The Commissioners sum up their conclusions as follows:

"In our opinion, when by reason of any casualty a train is delayed, it is the duty of railroad operators to furnish information as will relieve the passengers from unfounded apprehensions, and give them if possible an opportunity to decide rightly what course they will take as to remaining or leaving the train. In such cases distressing rumors often circulate through the cars, causing anxiety because of unknown and imaginary dangers. Passengers are sometimes led to unwise and even to dangerous action, simply because they do not know the facts. If in this case passengers, for want of information, lost time and incurred risks by leaving the train, when they might better have remained, it was not their fault, but the fault of those who withheld the information."

Stealing a Locomotive.

Dick Baldwin, a boy only 13 years old, has been arrested in Florida for stealing a locomotive from the railroad yard at St. Augustine, Fla. The engine was found on the road with the cab burned off and all the boiler flues burned loose.

Presence of Mind.

"So Vanderbilt is dead," said the freight brakeman. "I saw Billy once, and at that time I wished I hadn't. It was when I was a brakeman on the Central. One day we were shifting cars at a little station near Syracuse, when a special car, with locomotive attached, came in and stood on the main track near where we were at work. Special cars were not very uncommon, and we didn't pay much attention to this one. Pretty soon I was making a coupling, but the infernal link wouldn't fit. I tried it two or three times, and the engineer got out of patience backing up for me so many times, and I begun to get mad myself. Then I gave it another trial, but still it wouldn't work, and then I took that link and gave it a sling into the creek, and swore in the bargain. In about ten seconds I heard some one calling me, and, looking up, saw a plug-hatted and side-whiskered man standing on the platform of the special car. I knew him as soon as I laid eyes on him—it was Billy Vanderbilt. 'See here, young man,' says he, 'I've been watching you. Do you know whose property you have been throwing into the creek?' 'Yes, sir,' says I, trembling, and expecting to be bounced the next minute. 'Well, whose was it?' 'The Pennsylvania Railroad's, sir,' says I. 'Oh,' replied Vanderbilt, and then he went into the car and shut the door. I wasn't bounced either."—*Chicago Herald.*

A Singular Accident.

Early on the morning of Dec. 27 an express train on the New York, New Haven & Hartford road struck the platform of the little station at Pelhamville, 16 miles from New York, which had been torn from the fastening and blown upon the track by high wind. Just at this pount the road crosses a deep ravine by an embankment about 60 ft. high. The engine ran some 100 ft. along the ties and then turned over and rolled down the steep bank. It was followed by the mail car, which was first in the train, and which also went to the bottom of the bank, where it lay at right angles to the track. The remainder of the train, consisting of a baggage car, smoking car, one passenger and three sleeping cars, remained upon the ties, although all except the baggage car left the track and a very few feet more would have sufficed to carry the whole train into the ravine. The fireman was caught under the engine and killed. The engineer and three of the clerks in the postal car were injured, none of them very seriously. From the statements made by trainmen it appears that the platform must have been torn up by the wind but a moment before the train reached the spot, as the engineer said that, just as he was nearing the station, a great cloud of dust rose in front of him, which prevented him from seeing anything. The platform, as is the case at many stations, was built on posts, which raised it some feet above the ground and gave the wind a fair chance to strike under it. The planks were laid upon stringers, which, it is claimed by the railroad men, were spiked to the posts, but the fastening seems to have been insufficient to hold them, although the platform was in as good condition as is usual at small stations. The wind at the time was blowing a severe gale and did much damage elsewhere, so that its force might easily have been sufficient, even supposing that it was in good condition and spiked down with ordinary care.

Attempt at Train Wrecking.

A dispatch from El Paso, Tex., Dec. 29, says: "It became known here yesterday that a bold attempt was made on the night of Dec. 23 to blow up the bridge of the Southern Pacific Railroad across the Rio Grande River, several miles above the city. Dynamite was placed on the track and the bridge bolts were loosened. A dozen or more men speaking English seized bridge-tender Melvin at about midnight, bound and blindfolded him, and then marched him to his cabin. It was the intention of the men to blow passenger train No. 20 from the bridge as it was crossing, and then to plunder the dying passengers on the rocks below. The train, however, was several hours late, and as daylight approached the robbers fled."

RAILROAD GAZETTE

Published Every Friday.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

THE NEW YORK CENTRAL AND THE ERIE.

The opening of two new railroads between New York and Buffalo makes it very interesting to see how the traffic of the old lines has been affected. The Lackawanna has been worked through for three years; the West Shore for two. The New York Central's fiscal year ending with September last was the first in which it had the competition of the West Shore throughout the year. We show below how the New York Central's and the Erie's traffic have fluctuated since 1877, when it was light:

Year to Sept. 30.	Ton miles. (Millions of)		Pass. mile. (Millions of)	
	N. Y. Cen.	Erie.	N. Y. Cen.	Erie.
1877	1,620.0	1,114.6	316.8	170.9
1878	2,042.8	1,?24.8	300.3	140.3
1879	2,295.8	1,569.2	291.0	149.1
1880	2,555.1	1,721.1	330.8	180.5
1881	2,646.8	1,984.4	373.8	200.5
1882	2,394.8	1,954.4	432.?	225.1
1883	2,200.9	1,979.4	429.4	200.4
1884	1,970.1	1,794.9	387.8	169.6
1885	2,137.8	1,687.5	438.4	173.9

The effect of the new lines, which are so close as to divert local as well as through traffic, has been produced since 1882. But it is not these lines alone which have affected traffic, but changes in business and changes in rates. Business fell off after 1881, but in some years, and especially last year, the trunk line railroad traffic was increased by exceptionally low rates, which diverted shipments from the canal.

The Lackawanna was worked all the year 1883, but this would hardly be suspected from the course of the Erie's traffic, as it had a small gain in freight then, and the loss of 11 per cent. in passengers left it where it was the year before. The West Shore began to take local traffic in 1883, but was not opened through till 1884, when, compared with the year before the New York Central suffered a loss of 131 millions of ton miles (6 per cent.) and 41½ millions of passenger-miles (10 per cent.). Strange to say, the Erie lost 9½ per cent. in freight and 15½ in passengers the same year—more proportionally than the Central.

Last year very low rates stimulated traffic everywhere, but most on the New York Central and its passenger traffic especially, local fares on its main line being but a cent a mile, or half the usual rate, most of the year. Through fares were lower than before on both roads. The result was an *increase* of 167 millions of ton-miles on the Central and a *decrease* of 107 millions on the Erie; an increase of 50½ millions of passenger-miles on the Central and of 4½ millions on the Erie. Since 1882, the year before the new roads began to carry a considerable amount, the Central has lost 257 and the Erie 267 millions of ton-miles; the Central has *gained* 6½ millions and the Erie lost 51 millions of passenger-miles. The Erie has gained very largely in coal traffic meanwhile, and the Central little or nothing, so that of the other traffic, which is what the new roads compete for, the Erie has lost most, though it is by no means safe to say that it has lost most *because of* these new roads.

Going back to 1877 and tracing the course of the traffic on the two roads while it was growing, we see that the Central got an immense lead by a gain of one-fourth in freight traffic the first year, while the Erie gained only a tenth—423 millions against 110 millions. The Erie had not yet been fitted to accommodate a great increase of traffic. From that time till both roads reached their maximum freight traffic in 1881, the Erie made the larger gain in every year but one, and in the three years from 1878 to 1881 the Erie gained 760 millions (62 per cent.) and the Central 604 millions (30 per cent.) However, if we start from 1877, which is fairer, we shall find the Central making much the larger gain in amount—1,027 millions of ton-miles (63 per cent.), against 870 millions (78 per cent.). In passenger traffic a decline, interrupted by the Centennial year, reached its lowest point in 1878 on the Erie and 1879 on the Central. When it began to grow again the amount of growth was greatest on the Central, but the rate of growth greatest on the Erie. From 1879 to 1882 (when largest) the Central gained 141 millions (49 per cent.); from 1878 to 1882 the Erie gained 85 millions, or 60 per cent. But the Erie has lost 51 millions (22 per cent.) since 1882, and the Central has gained. But comparing 1885 with 1878, the increase has been four times as great on the Central as on the Erie; compared with 1877, the increase has been 518 millions (32 per cent.) on the Central and 573 millions (51 per cent.) on the Erie. The Central had 45 per cent. more freight and 90 per cent. more passengers than the Erie in 1877; in 1885, 26 per cent. more freight and 152 per cent. more passengers. Thus the Erie has made much greater headway with freight than with passenger business. It has held its freight traffic better than the New York Central, but its passenger traffic not so well. The Erie has had a great advantage in its great coal traffic, which has not fallen off like the grain and provision traffic since 1881, and on this road has increased steadily since 1880, and was larger last year than ever before. While it has had a loss in total freight traffic since 1881 amounting to 297 millions of ton-miles, it has had a gain of 131 millions in coal traffic, so that its loss in freight other than coal has been 428 millions, or 37 per cent, while the New York Central's loss in total freight traffic was 509 millions. The Central does not report ton-miles of coal separately, but the number of *tons* of coal carried by it was slightly less last year than in 1881. It is therefore probable that the two roads have lost about an equal amount of other freight since 1881, but the Erie much the larger percentage. Compared with 1884, the Erie has a decrease of 6 per cent.. and the New York Central an increase of 8½ per cent. in total freight.

The gross and net earnings of the two roads have been as follows since 1877, when they were the smallest for 13 years on the Erie and the smallest for six years on the New York Central:

Year to Sept. 30.	Gross earnings.		Net earnings.	
	N. Y. Cen.	Erie.	N. Y. Cen.	Erie.
1877	$26,579,086	$14,708,890	$11,632,924	$3,809,050
1878	28,910,555	15,644,978	12,774,578	5,009,114
1879	28,396,584	19,942,023	12,273,512	4,767,324
1880	33,175,913	18,693,109	15,326,019	7,040,183
1881	32,348 397	26,715,605	12.883,610	7,450,375
1882	30,628,781	19,975,774	11,232,807	6,887,680
1883	33,770,722	20,598.572	13,020.128	7,019,872
1884	28,148,669	17,618,976	10,299,356	5,549,6 9
1885	24,429,441	15,490,456	8,110,069	4,826,867

From 1877 to 1881 the New York Central gained $5,769,000 (21¾ per cent.) in gross earnings; the Erie $6,007,000 (40¾ per cent.) This is not as unnatural as may appear, for the Erie had stood still for many years, while the New York Central was growing, and not till 1878 was the Erie fairly in condition to accommodate any great increase in business. When we come to compare the decrease in earnings since 1881, we are met by a difficulty in the form of a change in the method of reporting the New York Central's earnings and expenses. Until 1884 sales of old materials were credited as earnings, and until 1885 the gross amount received for use of cars on foreign roads. What these amounts were in the earlier years cannot be ascertained, but sales of old materials amounted to $662,000 and car service to $996,000 in 1883; and if the accounts then had been made up as now, the gross earnings in 1883 would have been reported as $32,152,000; and if the old method had been used last year, the gross earnings then would probably have been about $26,000,000. So we may count the actual decrease in the New York Central's gross earnings from 1881 to 1885 as probably $6,348,000 (19¼ per cent.), while the Erie meanwhile has lost $5,225,000, or 25 per cent., so that the Erie has had relatively the greater loss.

The changes in accounts which have so greatly reduced what has been reported as the gross earnings of the New York Central have not affected the net earnings, so that comparisons of them can be made without any allowances. It appears that the New York Central reached its maximum in 1880, and the Erie a year later. From 1877 to 1880 the Central gained $3,693,000 (32 per cent.); from 1877 to 1881 the Erie gained $3,650,000 (96 per cent.) in net earnings. The Erie's net earnings were abnormally small in 1877, the last year of the receivership; but it actually did gain in net earnings much faster than the Central, gaining faster in traffic, and especially having introduced improvements enabling it to be worked more economically, which the Central had had long before. From 1880 to 1885 the New York Central has lost $7,216,000 (47 per cent.) in net earnings; the Erie from 1881 to 1885, $2,633,000, or 35 per cent. The Central had $8,277,000 more net earnings than the Erie in 1880; last year only $3,283,000 more.

It is doubtless true both that 1880 was abnormally favorable and 1885 abnormally unfavorable for the Central, as no years have been for the Erie, since 1877 at least. The competition which brought about the surrender of the West Shore affected the Erie's traffic to a very serious extent last year, but not nearly so much as the Central's. The latter did its work for an average of 1.419 cents per passenger per mile and 0.688 cent per ton per mile last year, while the Erie received 1.788 cents and 0.656 cent respectively.

But the Central has usually had the higher average freight rates, carrying a much smaller proportion of coal and a larger proportion of high-class freight. Thus the effect of the competition of the year is better shown by the fact that the *decrease* in the average rate was 27 per cent. for passengers and 17¼ per cent. for freight on the Central; 17½ per cent. for passengers and 8¾ per cent. for freight on the Erie. The restoration of rates, therefore, does the Central much more good than the Erie.

It has come about, partly from the improvement in the condition of the Erie, but chiefly probably by changes in traffic and improvements in handling it, that this road, with its heavy grades, carries its traffic at less expense per ton per mile than the Central, and seems likely to do so permanently, which a few years ago would have been pronounced impossible. The heavier locomotives in use on the Erie have had something to do with this; but they can be used by the Central, as they are almost exclusively on its leased West Shore Railroad. But probably the larger average train-loads of the Erie are due chiefly to its great coal traffic, and the ingenuity with which it has been used to fill cars which otherwise would be hauled empty. This is a very great advantage, which the New York Central must always lack. As the shipments of coal to the West have of late years increased faster than the shipments of produce to the East, roads commanding a large coal traffic have been able to increase the proportion of west-bound freight, and therefore their average train-loads.

It will be interesting to compare the average train-loads on these two roads, as follows:

Tons freight.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
N. Y. Central....	183	191	218	217	219	199	196	188
Erie.....	159	185	210	218	228	227	239	252
No passengers.								
N. Y. Central ...	61	60	65	72	79	74	60	70
Erie.....	46	47	55	58	63	55	45	46

In 1878 the average load of a freight train was 24 tons more on the New York Central than on the Erie; last year it was 64 tons more on the Erie than the Central. The passenger train-load has always been much the larger on the Central. The Erie's freight train-load has increased almost without interruption, but the Central's reached its maximum in 1882, and last year was 29 tons less than then. The expense per freight train-mile is considerably less on the Central—$1.01 last year, against $1.20 on the Erie—but not nearly as much less as the load, so that the expense per ton per mile was 0.54 cent on the Central and 0.475 cent on the Erie—12 per cent. less on the latter. The result is that with a lower average rate the Erie made a profit of 46 cents per freight train-mile; the Central only 28 cents. Under ordinary circumstances the Central commands a higher average rate than the Erie, which may offset its higher cost, and actually in 1884 its profit was 41 cents per freight train-mile, against 48 cents on the Erie. It remains true, however, that the cost of carrying freight is less on the Erie than on the Central, and a very important fact it is. The average receipt, expense and profit per ton per mile have been on both roads:

Year to Sept. 30.	Per ton-mile. Receipt.		Cost.		Profit.	
	Cen.	Erie.	Cen.	Erie.	Cen.	Erie.
1878	0.930	0.973	0.590	0.674	0.340	0.299
1879	0.796	0.780	0.551	0.561	0.245	0.219
1880	0.879	0.836	0.541	0.534	0.338	0.302
1881	0.783	0 805	0.563	0.529	0.220	0.276
1882	0.738	0 749	0.600	0.526	0.138	0.223
1883	0.915	0.786	0.689	0.532	0.226	0.254
1884	0.834	0.719	0.625	0.519	0.209	0.200
1885	0.688	0.656	0.540	0.475	0.148	0.181

Here again we must caution the reader that the

method of reporting expenses on the Central previous to this year made the cost per ton per mile greater by a considerable amount than the customary method, used also by it this year. But notwithstanding this, we see that the reported expense was as low in 1879 and 1880 as this year. The Erie's expense varied but little from 1880 to 1883, while the Central's was rising. Since 1883 it has fallen about one-tenth. How much the New York Central's has fallen we cannot tell, as a very large part of the apparent decrease of more than one-fifth is due to the exclusion from freight expenses of the gross payment for use of foreign cars, this alone amounting to 0.06 cent per ton per mile, while, by the present method of charging, it would have been but 0.016 cent. This accounts for about one-third of the decrease shown above, and there are other changes in the accounts which should account for part of the remainder, leaving it, however, quite possible that the decrease in expenses per ton per mile has been as large since 1883 on the Central as on the Erie, though the average train load has decreased 5½ per cent. on the Central, and increased 11 per cent. on the Erie meanwhile.

While the general course of the business of these two great roads can be accurately followed from the above, it must be remembered that last year was an abnormal year for both, but especially so for the New York Central, whose traffic (especially passenger traffic) was more stimulated by low rates and its profits more reduced from the same cause than the Erie's.

Earnings and Expenses of Four Trunk Lines.

Three of the great trunk lines have reported for the fiscal year ending with September, and the Pennsylvania's monthly reports enable us to give its earnings and expenses for the same period. Almost everything that could make their business bad happened in this year, and it is interesting to see how they stood it, which we may know from the following statement of their earnings and expenses:

	1884-85.	1883-84.	Decrease.	P c.
N. Y. Central:				
Gross earn	$24,429,441	$28,148,669	$3,719,228	13.2
Expenses	16,319,372	17,849,313	1,529,941	8.6
Net earn	$8,110,069	$10,299,356	$2,189,287	21.2
Erie:				
Gross earn	$15,490,456	$17,618,976	$2,128,520	12.1
Expenses	10,663,580	12,069,338	1,405,758	11.7
Net earn	$4,826,876	$5,549,638	$722,762	13.0
Pennsylvania:				
Gross earn	$41,128,815	$45,129,565	$4,000,750	8.9
Expenses	27,305,450	28,218,343	912,863	3.2
Net earn	$13,823,365	$16,911,222	$3,087,857	18.2
Baltimore & Ohio:				
Gross earn	$16,616,642	$19,436,607	$2,819,965	14.5
Expenses	10,973,585	11,676,307	702,722	6.0
Net earn	$5,643,057	$7,760,300	$2,117,243	27.3

Thus all have suffered a large decrease in earnings, varying from 9 per cent. on the Pennsylvania to 14½ on the Baltimore & Ohio, which suffered more, comparatively, than the New York Central, which might have been expected to suffer most, but whose rate of decrease was after all little more than the Erie's.

The decrease in expenses varied from 3 per cent. on the Pennsylvania to 11⅞ on the Erie. This had a very great effect on the net earnings, which fell off very largely on all the roads, least on the Erie, yet 13 per cent. even there, but 21 per cent. on the New York Central and 27 on the Baltimore & Ohio, which, curiously, suffered most, though so situated as to have the smallest part of its traffic affected by the railroad war of the year.

The aggregate earnings and expenses of the four railroads have been:

	1884-85.	1883-84.	Decrease.	P. c.
Gross earn	$97,665,354	$110,333,817	$12,668,463	11.5
Expenses	65,261,987	69,818,301	4,551,314	6.5
Net earn	$32,403,367	$40,520,516	$8,117,149	20.0

This is a fearful decline, and it is from an unfavorable year. For five years the figures have been:

	Gross earnings.	Expenses.	Net earnings.
1880-81	$115,412,576	$70,391,665	$45,020,911
1881-82	116,121,224	72,922,942	43,198,282
1882-83	125,194,160	77,443,801	47,750,359
1883-84	110,333,817	69,813,301	40,520,516
1884-85	97,665,354	65,261,987	32,403,367

Thus, gross and net earnings were much less last year than in any other of the five, and the decrease since 1883 is $27,529,000 (22 per cent.) in gross and $15,374,000 (32 per cent.) in net earnings. This decrease in net earnings is but little less than the aggregate dividends paid by these roads in 1883. Of the decrease in gross earnings in the two years, $10,000,000 was suffered by the Pennsylvania, $9,000,000 by the New York Central, $5,000,000 by the Erie, and $3,000,000 by the Baltimore & Ohio, while in net earnings the Pennsylvania has lost $5,181,000 (27 per cent.), the New York Central $4,910,000 (38 per cent.), the Erie $2,193,000 (30 per cent), and the Baltimore & Ohio $3,062,000 (35 per cent.). As the two New York roads alone have suffered from the local competition of new lines close to them, it is surprising to see that they have not lost much more in proportion than the other two roads, which have, however, suffered more from the depression in the iron industry. There is but one comfort to be extracted from the returns for last year—it will be very easy to improve on them.

The St. Louis & Cairo road is to be changed from 3 ft. to standard gauge, a lease to the Mobile & Ohio having been agreed on, with the change of gauge as one of the conditions. The road is 152 miles long and was built when the narrow-gauge craze was at its height, being then the longest line of 3 ft. gauge in the United States with the exception of the Denver & Rio Grande. Its builders claimed that it would be able to take away the bulk of the through business from the existing standard gauge line, but it never secured even a moderate share, and has picked up such a living as was possible from the local traffic, chiefly in coal. The bondholders had to take it after a time, and organized a new company with a light funded debt, $16,250 per mile in income bonds, and have added a coal branch 8 miles long. The road earned last year, not a very good year, only $1,869 gross and $324 per mile net, this being enough to pay 2 per cent. on the bonds, which receive only such interest as the earnings may warrant.

The Mobile & Ohio has long wanted an outlet from Cairo northward under its own control, and by this lease extends its northern terminus to St. Louis. It is understood that the lease guarantees 4 per cent. interest on the bonds, to pay which will require net earnings of $104,000, or $650 per mile. In what way the cost of changing the gauge is to be met is not stated. The lessee doubtless expects that the additional traffic which it can throw over the line will increase the earnings enough to make the lease pay for itself, and may, in any case, be willing to make some advances for the sake of the advantages it can secure from a St. Louis terminus.

November Accidents.

Our record of train accidents in November, which will be found on another page, contains brief accounts of 35 collisions, 57 derailments and 4 other accidents; a total of 96 accidents, in which 19 persons were killed and 118 injured.

Six collisions and 8 derailments caused the death of one or more persons each; 11 collisions and 15 derailments resulted in injury to persons, but not death. In all, 14 accidents caused death or fatal injury, while in 26 others there were lesser injuries; a total of 40 accidents, leaving 56, or 58 per cent. of the whole number, in which there was no injury to persons severe enough to be recorded.

The 35 collisions caused 27 deaths and 46 injuries; the 57 derailments killed 12 persons and injured 72, while in the 4 other accidents no person was killed or injured.

Of the persons killed 18, and of those injured 66 were railroad employés, that class of persons thus furnishing 95 per cent. of the killed, 56 per cent. of the injured and 61 per cent. of the whole number of casualties.

As compared with November, 1884, the number of accidents was the same, but there was a decrease of 28 killed and of 12 injured.

These accidents are classed as to their nature and causes as follows:

COLLISIONS:		
Rear	25	
Butting	8	
Crossing	2	
		— 35
DERAILMENTS:		
Broken rail	5	
Broken switch-rod	1	
Broken bridge	2	
Spreading of rails	5	
Broken wheel	5	
Broken axle	4	
Broken truck	4	
Broken brake-beam	2	
Accidental obstruction	5	
Cattle on track	3	
Wash-out	4	
Land-slide	1	
Misplaced switch	4	
Open draw	2	
Rail removed for repairs	1	
Malicious obstruction	1	
Purposely misplaced switch	2	
Unexplained	6	
		— 57
OTHER ACCIDENTS:		
Broken parallel-rod	2	
Broken wheel not causing derailment	1	
Cars burned while running	1	
		— 4
Total number of accidents		96

Six collisions were caused by misplaced switches; four by trains breaking in two; two by cars blown out of sidings upon the main track, and one by a mistake in orders.

One of the broken bridges failed because of the washing out of an abutment by a freshet.

A general classification of these accidents is made as follows:

	Collisions.	Derailments.	Other.	Total.
Defects of road	..	13	..	13
Defects of equipment	4	15	3	22
Negligence in operating	29	7	..	36
Unforeseen obstructions	2	13	1	16
Maliciously caused	..	3	.	3
Unexplained	..	6	..	6
Total	35	57	4	96

Negligence in operating is thus charged with 37½ per cent. of all the accidents, defects of road with 13½, and defects of equipment with 23 per cent.

A division by classes of trains and accidents is as follows:

Accidents:	Collisions.	Derailments.	Other.	Total.
To passenger trains	1	17	3	21
To a pass. and a freight	12	..	..	12
To freight trains	22	40	1	63
Total	35	57	4	96

This shows accidents to a total of 131 trains, of which 34 (26 per cent.) were passenger trains, and 97 (74 per cent.) were freight trains.

Of the total number of accidents 58 are recorded as happening in daylight and 38 at night.

The month was not an unfavorable one, so far as the weather was concerned, being generally free from storms and from the cold which sometimes puts in an early appearance. The few storms which came were of rain and not of snow, as is shown by the general character of the accidents.

Collisions were in somewhat smaller proportion than for two or three months past, being only a little over one-third of the total, and most of those recorded were rear collisions of freight. There were quite a number due, apparently, to the failure to use signals promptly, although many of the accounts received are so indefinite as to leave this to be inferred only, and not definitely stated.

Misplaced switches caused 10 accidents in all, 6 collisions and 4 derailments, and two of the three maliciously caused derailments also resulted from switches misplaced by the train-wreckers.

There was no accident during the month presenting special features of interest, or calling for any special comment.

For the year ending with November the record is as follows:

	Accidents.	Killed.	Injured.
December	105	24	109
January	145	24	182
February	216	44	259
March	86	17	84
April	81	14	75
May	62	8	65
June	75	24	115
July	76	28	75
August	92	37	172
September	91	25	98
October	123	36	134
November	96	19	118
Total	1,248	300	1,486
Total, same months, 1883-84	1,198	307	1,764
" " " 1882-83	1,676	470	2,009
" " " 1881-82	1,329	387	1,475

The monthly average for the year was 104 accidents, 25 killed and 124 hurt. The yearly average for the four years was 1,363 accidents, 389 killed and 1,684 injured.

The averages per day, for the month, were 3.20 accidents, 0.63 killed and 3.93 hurt; for the year they were 3.42, accidents, 0.82 killed and 4.07 injured.

The average casualties per accident were, for the month 0.198 killed and 1.229 hurt; for the year, 0.240 killed and 1.191 injured.

The month thus makes a favorable showing, its averages being somewhat below those of the year.

Pennsylvania Railroad Earnings in November.

The Pennsylvania Railroad report for November shows for the first time since April, 1884, an increase in the gross earnings of the lines east of Pittsburgh and Erie, compared with the previous years. The increase, it is true, is very small, and November was particularly unfavorable last year, so that it can hardly be said that November this year was more favorable than October or September, for if we compare the *gross* earnings in successive months with those of 1883 we shall find the decrease to have been:

	Aug.	Sept.	Oct.	Nov.
Amount	$819,074	$358,371	$516,174	$501,941
Per cent	17.2	7.7	10.5	11.2

Thus the rate of decrease from 1883 was greater in November than in the other two months since August; but in all these of the fall months the decrease has been at a less rate than for the previous eight months. Thus down to the end of August and for the three months since, the gross earnings have been:

	1882.	1883.	1884.	1885.
8 mos. to Aug	$31,471,179	$33,258,910	$31,940,230	$28,961,006
3 mos. to Nov. 30	13,451,482	13,663,824	12,857,353	12,607,338

What we wish to call attention to is the fact that the decrease which has been going on so long did not begin to be very large until after August in 1884. For the first eight months of 1884 the average monthly earnings had been but $164,835 (5 per cent.) less than in 1883, and were $58,631 *more* than in 1882; for the three fall months of 1884 they were $370,824 (8 per cent.) per month less than in 1883 and also $198,043 less than in 1882. Now, the apparent improvement this year since August is due to the fact that the earnings were so exceptionally bad last year. They remain (except in November) less than last year, though not nearly so much less than they were; but compared with 1883 the decrease in the fall months is very nearly at the same rate as earlier in the year—very nearly 10 per cent. for the eight months to August and also for the three fall months. There has been an improvement in net earnings, but that is due to reduced expenses.

For the month of November the gross and net earnings and working expenses of the lines east of Pittsburgh and Erie have been, for 13 successive years:

Year.	Gross earnings.	Expenses.	Net earnings.
1873	$3,015,376	$1,823,449	$1,191,927
1874	3,064,913	1,728,843	1,336,070
1875	3,064,776	1,736 005	1,328,771
1876	3,465,231	1,654,393	1,810,838
1877	3,059,457	1,593,373	1,466,084
1878	2,996,102	1,605,852	1,390,250
1879	3,131,997	1,785,549	1,346,448
1880	3,574,914	2,180,838	1,394,076
1881	3,840,216	2,379,872	1,460,344
1882	4,373,826	2,771,464	1,602,362
1883	4,473,480	2,616,303	1,857,177
1884	3,950,938	2,475,227	1,475,711
1885	3,971,530	2,355,254	1,616,285

Thus the gross earnings this year, though $20,602 0/4 per

cent.) more than last year, were smaller than in any other year since 1881; but the working expenses, being the smallest since 1880, the net earnings were larger than in any other year except 1883 and 1876 (when made large by Centennial travel). The increase in net earnings over last year is $140,574, or 9½ per cent.—six-sevenths of it due to reduced expenses.

Compared with 1883, when gross and net earnings were largest, the decreases are:

	Gross earn.	Expenses.	Net earn.
Amount	$501,941	$261,049	$240,892
Per cent	11 2	10.0	12.7

Thus a great deal of progress has yet to be made to equal the earnings in 1883.

The lines *west* of Pittsburgh and Erie have shown the following surplus over or deficiency in meeting all their liabilities in November:

1879.	1880.	1881.	1882.	1883.	1884.	1885.
Surplus.	Surplus.	Surplus.	Surplus.	Deficit.	Deficit.	Deficit.
$380,260	$344,827	$161,331	$320,303	$52,408	$212,085	$50,699

Thus this shows nearly the same result as in 1883, and a gain of $161,386 over last year—more than the gain in net earnings on the Eastern system, and the more welcome because there was a loss compared with last year of $50,238 in October, $151,236 in September, and an average monthly loss of about $79,000 in the eight months previous. But here again this is due to the exceptionally unfavorable result last year in November. Compared with years previous to 1883, the decrease is very large this year.

Adding the surplus of this Western system to and subtracting its deficit from the net earnings of the Eastern system, we have as the income from the two systems in November:

Year.		Year.	
1879	$1,728,708	1883	$1,804,769
1880	1,738 903	1884	1,263,626
1881	1,621 675	1885	1,565,316
1882	1,922,665		

Thus there is the very considerable increase of $301,690 (24 per cent.) over last year, yet a smaller income than in any other year of the seven—13 per cent. less than in 1883, 18½ per cent. less than in 1882, and even 9¼ per cent less than in 1879, since which time the capital stock has been increased 40 per cent.

For the eleven months ending with November the gross and net earnings and working expenses of the lines *east* of Pittsburgh and Erie have been for the last 10 years:

Year.	Gross earnings.	Expenses.	Net earnings.
1876	$33,808,494	$20,370,819	$13,437,676
1877	28,275,753	17,386,675	10.889,078
1878	29,031,439	16,795,629	12,235,810
1879	31.166,353	18,440,865	12,725,488
1880	37,712,241	22,203,468	15.508,773
1881	40.392,428	24,181.246	16,211.182
1882	44,922.661	27,675,084	17,247.577
1883	47,242,738	29.089.862	18,152,876
1884	44,797,586	27,853,912	16,943.674
1885	41,568,347	26,792,277	14,776,070

The decreases from last year are:

	Gross earnings.	Expenses.	Net earnings.
Amount	$3,229,239	$1,061.635	$2,167,604
Per cent	7.2	3 8	12 8

The decrease, especially in net earnings, seems very large, but it is less in amount by $158,261 than at the end of August, when the net earnings were no less than 20 per cent. less than last year.

Compared with 1883 the decrease in gross earnings for the 11 months was 12 per cent., and in net earnings 18⅜ per cent.

The surplus or deficit of the lines *west* of Pittsburgh and Erie for the 11 months has been:

Year.		Year.	
1879, surplus	$1 082.278	1883, surplus	$1,110,803
1880, "	2,859,562	1884, deficit	731,111
1881, "	2,740,008	1885, "	1,246,292
1882, "	1,901,284		

The decrease from last year (increase in deficit) is $515,181, from 1882 it is no less than $4,105,854—4¼ per cent. on the present capital stock of the company, and compared with 1881 the decrease is nearly as great. This shows very clearly what an alarming reduction there has been in the profits of this Western system, which is very like what has happened on other Western connections of the trunk lines.

Adding the surplus of this system to the net earnings of the Eastern system, and subtracting the deficit, we have as the income from both systems:

Year.		Year.	
1879	$13,807,766	1883	$19,263,679
1880	18,368,335	1884	16,212,563
1881	18.951,190	1885	13,529,778
1882	19,148,861		

Thus the income from the two systems is $2,682,785 (16½ per cent.) less than last year, and $5,733,901 (30 per cent.) less than in 1883—equivalent to 2.8 per cent. and 6 per cent. respectively, on the capital stock now outstanding. The great decrease in the profits of the Western system after 1881 was rather more than made good by a great increase in the profits of the Eastern system until 1884, when both went down together. Of the total decrease of $5,733,901 since 1883, $2,357,095 has been on the Western system.

It is reasonable to expect some improvement over last year in December in the profits of both systems, though December was much less unfavorable than November last year. The year, however, cannot fail to be the least profitable since 1878, and probably will not more than equal 1879.

State Laws as to Dispensing with Crossing Stops.

The conditions of the law in respect to dispensing with stops at railroad grade crossings by the use of interlocking signals or other automatic safeguards are given below, a notable feature being that in no state is any provision made by which the proportion of the expense to be borne by each company benefited may be definitely fixed. The states are mentioned in the order in which they have acted on the subject.

The Massachusetts law—passed after somewhat urgent recommendations by its Commission, which were at the time regarded by many as somewhat heretical, if not positively dangerous, the public knowledge of interlocking, even among railroad men, being much less then than it is now—provides that "The approval of the Board shall be required for a system of signals to be established and maintained in concert" by railroads which cross each other, but that a full stop shall not be dispensed with "unless a system of interlocking or of automatic signals, approved in writing by the Board, *is adopted by both corporations.*"

Ohio, at almost the same time, April 14, 1882, provided by law that "any works or fixtures" approved by the Commissioner of Railroads and Telegraphs as rendering it safe to dispense with stops, plans having been filed with him, shall dispense with the necessity of a stop; and if the Commissioner shall fail to approve the plan within twenty days, "*such companies*" may apply to the Court of Common Pleas, where appropriate action will be held.

This enactment seems to require not only that both companies shall consent passively, but that they shall unite in active legal proceedings to avert a decision which might be not unwelcome to one of them.

Michigan, by an act approved May 10, 1883, passed first a very absurd enactment that "authority is hereby given to said Commissioner, and it shall be his duty, if he shall deem it practicable, to prescribe the use of the interlocking switch and signal system, *provided that at crossings where all trains come to a full stop, no other system than that requiring such stop shall be prescribed.*"

The absurdity of thus cutting off one of the chief advantages of interlocking signals struck the Legislature almost immediately, however, and in act No. 174 (the previous act being No. 81) of the same session, it is provided, without specifically repealing any part of the preceding law, that "whenever *there shall be adopted and used* at any such crossing an interlocking switch and signal system, or other device" which the Commissioner thinks makes it safe to dispense with a stop, he may authorize it in writing, with any regulations as to speed or other matters which he deems necessary, and with power to revoke his action.

In the strict letter of these laws, the Commissioner may prescribe automatic signals *without* dispensing with a stop, but can only authorize the latter after the apparatus is adopted and in use. Neither is he—what is a more serious matter—given any specific power to say what part of the expense each of the two companies concerned shall bear. Other statutes may by inference confer this power, but as none can well have been framed with this contingency in view, it is more likely that the bald power to prescribe would fall to the ground in case of dispute for lack of a specific provision as to how the order was to be enforced on each of the companies concerned. These provisions come the nearest, however, of those of any state to providing a means by which one railroad which is anxious to escape from the burden of stopping at a crossing can compel the other beneficiary to bear its fair share of the cost.

The Indiana law, approved March 2, 1883, is merely permissive, authorizing the Auditor of State to approve interlocking or automatic signals at crossings, from plans submitted by "two or more railroads" which have erected or are about to erect them, and thereafter to authorize the omission of stops. Appeal is provided for from the Auditor to the Circuit Court, and it is specifically provided that such signals shall not be "used or put in" at any crossing "*to the detriment* of any other railroad company," unless with the consent of that company in writing. Under this provision, the manager who wishes to dispense with twenty different crossings, and undertakes to persuade twenty different companies that it will not be "to their detriment" to do so, has a cheerful task before him.

Provision is also made for the engagement of a civil engineer to examine and report upon the plans and local conditions, but only with a view to determine whether the apparatus should or should not be regarded as adequate, and not to decide any dispute between the companies, nor to initiate any action.

The New York law, passed May 31, 1884, provides that the requirement of a full stop may be dispensed with whenever the Board of Commissioners "decide it to be impracticable"—whatever that may mean—or where "interlocking switch and signal apparatus is *adopted* and put in use *by the railroads* there crossing each other at a level," of a form approved by the Board.

The state of Illinois has passed through one house an act essentially similar to that of New York, and it is expected that the law will be passed at the coming session. We are aware of no further positive legislation on the subject.

Under the strict wording of the New York law a company might erect and stand ready to operate at its own expense an apparatus of the kind, but its use to dispense with stops could not be authorized by the Board unless it had been likewise "adopted" by the other company concerned. Such an outrageously obstructive position would not, of course, be very likely to occur, except with distinctly injurious intentions, and if it did occur, means would no doubt be found to bring a pressure on the offending road, even without further legislation, which would make its position very unpleasant; but in less extreme cases it is easy to see how, under all these laws, a manager attempting in good faith to benefit his company and benefit the roads crossing and the public as well, by perfectly fair and equitable arrangements for dispensing with stops at crossings, might find it an irritating and almost hopeless task, and might feel compelled to give it all up in disgust before he had fairly begun.

That this is the true reason why the use of interlocking signals at crossings makes such comparatively slow progress, or even a chief reason, we will not assert, but the fact that progress in that direction is slow, and the fact that it must at least operate in instances, are beyond question. In view of this, it seems desirable that laws should be made to provide an equitable method by which a joint benefit should be jointly paid for, whenever the fact of benefit was established by the desire of one of the parties to avail himself of it.

Otherwise, the difficulty of agreement is precisely the same as would exist in cities as respects party-walls, without the law which authorizes any man to build half his wall on his neighbor's land and compel his neighbor to pay for it when he uses it. The equities, and the great advantage to both sides, are here exceedingly clear, yet how often would it be impossible to arrange the matter if it could only be done by mutual consent and agreement in each case?

It is now established beyond cavil that by interlocking signal works of moderate cost, provided with derailing switches and electric-locking, crossings can be made as absolutely safe as it is humanly possible to make them without requiring trains to stop at them, and a great deal safer than by requiring full stops at them without such safeguards, and it is desirable that when a road of its own motion wishes to benefit itself and every one else, it shall be able to do it without entering into long-winded negotiations, or submitting to injustice; without the danger, for example, that the very first suggestion of such a plan will meet with cordial assent to the general plan, but with insistance that "our road" shall only pay 30 per cent. of the expense instead of 33⅓. When a man has already conceded the last ounce he thinks he ought to, that odd 3⅓ per cent. is very apt to cause him to throw up the whole thing in disgust. Moreover, crossings are very frequently so situated that the joint consent of three or four lines is necessary for any action, and in still more instances a great part of the advantage to be realized from dispensing with any one crossing can only be obtained by dispensing with a series of perhaps a dozen.

A further cause tending to prevent ready agreement between companies is that at very many crossings it is far more important to one line than to another to avoid the stop. A particular instance of this, which those who know of it will readily recognize, is on an east-and-west line of heavy traffic, which in crossing a valley by two long descending grades is crossed in the hollow by a line of light traffic and chronic poverty following up the valley. The crossing is probably the greatest obstacle to hauling longer trains over the division, and at this particular point an overhead crossing although somewhat expensive, would probably be the most economical in the end; but it is plain that whether interlocking signals or an overhead crossing be put in, it is not just that one line should bear *all* the expense of an improvement from which both profit.

In what way or by what measures equity could be most readily obtained in such cases we will not now attempt to discuss. The good sense of both parties would probably in the end make a satisfactory agreement to be reached in most instances if either parties were thoroughly in earnest, but busy men, who have plenty of other matters under their own exclusive discretion to occupy their time, will be apt to shrink from undertaking negotiations which will lay them open to criticism if they concede too much, and which cannot be carried through at all, possibly, without it. The difficulty of devising a measure which, at the instance of either party, should provide for a definite distribution of the expenditure, is reduced by the fact that the most which could will happen, under any approximately equitable measure

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For the first time in the history of the American Society of Civil Engineers, a contested election occurs this year, an opposition ticket having been placed in the field by a considerable body of the membership who were dissatisfied with the action of the nominating committee. The latter placed in nomination an entire new list of officers except the Secretary and Treasurer, and one of the grounds of dissatisfaction is that this was interpreted as a "reflection upon past management," which, however, is "emphatically disclaimed" by the committee.

The two opposing tickets, headed by Washington A. Roebling and Henry Flad as nominees for the presidency, are given in another column. Circular letters have been issued with each, which, however, give little explanation of the real cause of the difficulty, perhaps because it would be a little difficult to do so. That it is in no way a radical or bitter difference, however, is perfectly clear, and that there should have been any difference at all has probably come more from accident than otherwise. Hence, whatever be the result, it will probably make but little difference in the well-being of the Society or in the feelings of those not intimately concerned in the present contest.

Whichever candidate for President be chosen, there will be with many members, no doubt, a feeling of regret that the present President, Mr. Frederick Graff, of Philadelphia, could not have been renominated, as he has distinguished himself by the interest which he has shown in the working of the Society and won many friends thereby, in addition to being in every way a proper person for the position; but the practice, which may be said to be already an unwritten law of the Society, to elect a new President each year, is a good one, and ought not to be changed for merely personal reasons. In the natural course of events, there will be at least one hundred engineers in a hundred years who will be of such eminence in the profession that the honor of election as President of the American Society will be, in a measure, due them. Both of the new candidates are certainly men who are entitled by their works to the honor.

The American Society of Civil Engineers is yearly increasing in numbers and influence. A movement is now making, and we learn with prospects of success, by which the advantages of membership in the junior grades of the Society may be increased and its cost decreased, and also for

the formation within the Society, and under its auspices, of "Sections" in the various large cities other than New York. This, it is hoped by the advocates of the measure, will, in connection with the modifications of the junior grades of membership, dispense with the necessity of organizing independent local societies in every city, by offering greater advantages for these organizations within the Society, thus greatly increasing its influence and usefulness, without sacrificing or encroaching upon what is all but universally admitted to be its great source of strength—its high standard of membership, which makes election to membership almost equivalent to a certificate of graduation in the school of experience from those most competent to judge. If such a plan can be successfully matured and carried through, or even without it, the future of the Society is very hopeful. One of its strongest points is the very general interest which its members feel in it, in which, like the Institute of Civil Engineers in London, it is somewhat conspicuous among others of its kind.

The week has furnished a new argument for the solid construction of platforms, and likewise a wholly new cause for serious accident in the wreck at Pelhamville, on the New York, New Haven & Hartford road, on Sunday, Dec. 27, caused by the blowing of an entire station platform across the track, and resulting in the death of one man, the injury of several others, and a loss by destruction of rolling stock amounting to a sum which would build several solid stone platforms which, once built, will not need to be "repaired and partly replanked" within six years, as had been the case with this platform.

Although no wreck so serious and complete has occurred within our recollection from this cause, or anything very closely resembling it, yet our impression is that it is not wholly without precedent, and there have been several within the past few years which have arisen from the blowing or falling on the track of defective or rotten wooden structures, enforcing the moral which was drawn in our issue of July 17, 1885, and again in the following issue, that the use of wood is, from habit or otherwise, carried to lengths which are not only uneconomical in the long run, but which even involve more immediate expense than solider and better construction. Of station platforms this is particularly true, and in view of the many arguments, beside that furnished by this week's accident, for solid and durable platforms, we may perhaps advantageously reprint the notes of comparative cost which appeared in the issues referred to:

"Comparing the prices of wooden with the more durable forms of platforms, it will be seen that there is little if any margin between the cost of *well built* wooden platforms and something which is really, when once constructed, much more tasteful, durable and economical. This is from time to time asserted, but it does not seem to be generally believed, perhaps as much as anything from the convenience of wood and the habit, which is too general in this country, of using it for all purposes for which it is suitable, as well as many for which it is not. For convenience of comparison we may reproduce the prices previously quoted, noting that they were given us nearly a year ago, and may have changed, but are now more probably lower than higher:

	Cents.
Well built wooden platforms with stone or brick piers, 12 ft. wide (for freight also)	25.8
Well built wooden platforms with stone or brick piers, 18 ft. wide (for freight also)	16.5
Blue flag-stone, 4 ft. long (allowing 1 ct. only for laying)	16.0 +
Blue flag-stone, 8 to 9 ft. long (allowing 1 ct. only for laying)	26.0 +
(If the latter is finely axed and taken out of wind, the cost is about doubled).	
Natural rock asphalt (5 years' guarantee)	17.0 to 22.0
(With 6 to 7 cts. per sq. ft. extra for underlying bed of concrete, 3 in. thick).	
"Granolithic" (a very superior concrete made of Portland cement and finely crushed granite, giving an exceedingly fine and durable surface)	25.0 +

"Some of the artificial asphalts are cheaper than any of the above, guaranteed against normal platform wear from baggage trucks and passengers for a limited number of years."

It might have been added to the above that a "guarantee" (which means patching) of some of the artificial asphalts is a poor substitute for some really durable material which does not need patching, but there are some of those asphalts which, we are told, do good service.

Chicago through rail shipments eastward for the week ending Dec. 26, by the incomplete report this year and last, giving only flour, grain and provisions, but by the complete report for previous years, giving freight of all kinds, have been, in tons:

1879.	1880.	1881.	1882.	1883.	1884.	1885.
35,148	44,081	59 074	73,330	37,442	34,384	37,573

Allowing for the shipments of high-class freights, the shipments this year must have been larger than in any other except 1881 and 1882. The shipments of the week containing Christmas are usually much below the average.

The total shipments and the percentage going by each railroad in each of the last six weeks have been:

	Week ending. Nov. 21.	Nov. 28.	Dec. 5.	Dec. 12.	Dec. 19.	Dec. 26.
Tons:						
Flour	4,246	6,534	8,216	5,274	5,139	7,024
Grain	18,686	36,246	22,569	23,342	21,269	18,834
Provisions	11,593	11,537	10,443	11,599	10,522	11,715
To'al	34,525	54,317	41,228	40,215	36,930	37,578
Per cent.:						
C. & Grand T.	8 6	14.2	16.5	12.3	9.0	13 6
Mich. Cen	20 0	27.6	18.0	19.0	21.0	10.5
Lake Shore	13.8	11.2	15.4	13.9	15.1	20.3
Nickel Plate	12.4	10.9	8.3	9.8	10.5	10.0
Ft. Wayne	19.8	14.3	21.1	15.9	16.9	16.0
C., St. L. & P.	14.4	9.8	10.8	12.4	11.5	13.2
Balt. & Ohio	6.2	6.2	7.7	9.8	7.0	7.0
Chic. & Atlantic	4.8	5.8	2.2	6 9	9.0	9.4
Total	100.0	100.0	100 0	100.0	100.0	100.0

This shows a small increase in total shipments last week over the previous week, a decrease of 11½ per cent. in grain having been more than balanced by an increase of 36 per cent. in flour, and 11 per cent. in provisions. The flour shipments were the largest since the middle of October, and with one exception the largest since May, and the provision shipments were the largest since Sept. 19, and with two exceptions the largest since the middle of January.

The percentages last week are remarkable chiefly by the great increase in the Lake Shore's share and the great decrease of the Michigan Central's, the latter taking but about half of its usual percentage. The three Vanderbilt roads together carried 40.8 per cent. of the whole, and the two Pennsylvania roads 29.2, against 46.6 and 28.4 the week before. The Chicago & Atlantic also had an unusually large share of the traffic.

The Chicago, St. Louis & Pittsburgh led in provision shipments, taking 23.3 per cent. of the whole, against the Lake Shore's 17.5, the Chicago & Grand Trunk's 15.7, the Fort Wayne's 15 and the Nickel Plate's 13.2 per cent. This is an unusual distribution of the provision shipments, the Lake Shore very rarely taking second place and the Nickel Plate not often having an important part. The two Pennsylvania roads and the Chicago & Grand Trunk usually take the most of them, but last week the three Vanderbilt roads had 38½ per cent. of the whole.

Large provision shipments are to be expected during the remainder of the winter, and perhaps large flour shipments; but unless there is some change not now apparent, grain shipments are likely to remain light.

The inaccuracies of chilled car-wheels have attracted the attention of *Engineering*, which finds that "taking the extreme case of a 24-in. and a 24¼ in. wheel on the same axle; in a 100-mile run there would be a difference of more than a mile in the distance compassed by each of the wheels," and one or the other must slip that amount. This is true enough, but then, as *Engineering* justly notes, the case is extreme. To show that similar dangers may exist with built wheels: Take the case of two 18 in. wheel-centres on the same axle, one of which, by some inadvertence, had a tire 3 in. thick and the other only 2 in. thick; would not this cause nearly three times as much slippage as the other "extreme case?" This latter danger is escaped by using chilled car-wheels, which is, perhaps, one reason why they continue in use.

The continuous guard-rails of the New York elevated rail roads (which are placed both on the inside and outside of each rail), have been directly instrumental in preventing derailment in more cases than is generally realized. Since the roads were first opened, in 1880-81, there have been from four to nine cases per year when the guard-rails alone have prevented derailment. Within the last two years the number of these accidents has been less, but in 1881 and 1882 there were six and nine respectively, of which seven were derailments from collisions, seven derailments at switches and one a break-down. In addition to these, there had been up to May, 1884, 22 engine axles broken *en route*, 11 of which were in the single year 1882, since which the number of such cases has been less. The guard-rails, of course, become in such cases of great importance, although no doubt in many cases the wheels did not leave the rails.

In all there may have been in the whole history of the elevated railroads some 60 cases within the past five years where the guard rails were not only potentially but actually an efficient safeguard in urgent need, or about two per mile, which is certainly quite enough to justify their existence even where fewer lives are exposed than on the elevated lines; while at the same time it must be admitted to be a creditable showing for the management that there are no more, especially as among them all not one really serious catastrophe, such as would result at any time from a train leaving the road bed entirely and falling to the street below, has resulted. Most of the collisions and derailments which have so far occurred have occurred in fogs, and the additional caution used in running then has prevented any of the collisions occurring at high speed.

The Society of Mechanical Engineers would do well to exercise a little more care as to the character of the statements made in papers which appear under its imprint, if we may judge from certain statements which appear in a recently published paper by Mr. Francis E. Galloupe, M.E., about the locomotive engine, which appear at the close of a long descriptive paper on the Meigs elevated railroad system. Mr. Meigs' system is one of great ingenuity and originality in many of its details, undoubtedly, and it may reasonably be hoped that it will prove of practical merit, after the errors incident to the first embodiment of a new design have been corrected, should such appear, as it is but natural that they should. Neither would it be just that the system should be held responsible for the follies of those who describe and advocate it. Nevertheless, it will not be helped by the advancement of such balderdash as this in its behalf.

After alleging that the friction of the driving wheels upon the rails is "in the ordinary system" entirely dependent on the load on the drivers and "is but about one-fifth of this load on an average," which statement can be passed as defensible by good pocket-book authority not over half a generation old, we have this extraordinary statement:

"It is estimated that the actual loss by slippage of the wheels and absence of means to prevent the bouncing or jumping of the wheels from the rails upon railroads *is not less than one-fifth their circumference in every revolution*, causing *a constant loss of power to an extent of twenty per cent. of the entire power of the engine.*"

The exceedingly slim evidence on which the first italicized statement can be supposed to rest, its entirely unreliable character and the abundant evidence to the direct contrary, were summarized in our issue of Sept. 4 of this year. Suffice to say, there is not a particle of evidence tending in that direction which any careful man should accept as conclusive.

The closing statement goes far beyond this in absurdity. A mechanical engineer might be supposed to be sufficiently familiar with the distinction between power or energy and a mere stress to understand that, even if the tractive force of the engine fell to zero (which is far from the case) during the one-fifth of the time that the wheels are slipping (if they did slip), it would not necessarily nor probably follow that the energy generated during that period was therefore dissipated and lost. *How* is it lost, and where does it go to?

We have noticed several other almost equally reckless statements in the paper, and that statements so plainly "controverting established facts" should be allowed to appear under the imprint of the Society of Mechanical Engineers is not creditable to it: all of which, as before stated, is without prejudice to the mechanical merits of the essential features of the Meigs system.

Record of New Railroad Construction.

Information of the laying of track on new railroad lines is given in the current number of the *Railroad Gazette* as follows:

Central Pacific.—The *Oregon Division* is extended from Delta, Cal., north to Slate Creek, 10 miles.

Chicago & Northwestern.—The *Yankton Branch* is extended to Yankton, Dak., 13 miles.

Chicago, Rock Island & Pacific.—The *St. Joseph Branch* is extended westward to St. Joseph, Mo., 38½ miles.

Coalport & Cresson.—Completed from Coalport, Pa., to Cresson, 26 miles.

Greenfield.—Completed from Greenfield, Mo., south 3½ miles.

Gulf, Colorado & Santa Fe.—Extended northwest to Brownwood, Tex., 3 miles.

Kansas City & Southwestern.—Extended from Arkansas City, Kan., southwest to Cale, 6 miles.

Midland, of Indiana.—Extended from Westfield, Ind., west 4 miles, and from Lebanon, Ind., east 7 miles.

This is a total of 111 miles on 8 lines, making 2,871 miles thus far reported for 1885. The new track reported to the corresponding date for 14 years has been:

	Miles.		Miles.
1885	2,871	1878	2,263
1884	3,729	1877	2,019
1883	6,130	1876	2,278
1882	9,922	1875	1,333
1881	7,870	1874	1,844
1880	6,139	1873	3,630
1879	3,801	1872	7.160

These figures include *main track only*, second tracks and sidings not being counted.

NEW PUBLICATIONS.

Notes on the Chemistry of Iron, by Magnus Trolius, E. M. Published by John Wiley & Sons, New York.

This work contains a practical description of various methods of analyzing iron and steel and iron ores, and as it embodies the actual experience of a practical analyst, cannot fail to be valuable to those engaged in testing the purity and quality of iron and steel. The book contains several illustrations of laboratory apparatus.

TRADE CATALOGUES.

The Krupp System of American Standard Steel-Tired Wheels. Thomas Prosser & Son, New York.

This particularly excellent sample of trade publications gives full details about the various styles of wheels and tires dealt in by the firm, including fifteen half-scale dimensional sections of the tires and modes of fastening on the same of as many wheels and likewise smaller sections and views of the entire wheel. It is a thoroughly business-like publication, which may well be valued and preserved for the information contained in it.

THE SCRAP HEAP.

Spikes.

A paper reports a railway accident in which a Pittsburg train "struck a calf in the North end on Monday last, and broke his leg," a casualty which compelled the owner to kill him. Another journal, brimming over with genius, comments upon this item by saying that "Had this calf been struck in its South end, its neck would probably have also been broken." This is fairly funny, says the *Sportsman*, but not so quaint as the advertisement which the *Stedpenville Gazette* gives about a girl who ran away from home, and whose father advertised for her as "Laura, aged 18, dressed in a straw hat." Our contemporary, exercising herself about the fate of the girl, quaintly but plainly remarks what a wonderful sight "that girl will be if her hat blows off." The innate modesty, the tender delicacy, and the more than beautiful respect which we have for the sweeter half of creation prevents us adding any comments to this reflection.—*Exchange.*

The Massachusetts Commission on the Billerica Accident.

The following is the report of the Massachusetts Railroad Commission on the recent rear collision at Billerica, on the Boston & Lowell road:

"On the night of Dec. 23, a passenger express train (315) running from Boston to Lowell struck the rear of a through freight train (305) of 56 cars, demolishing the rear car, the caboose and a box car, damaging the engine of 315 and the cars of 305 to the amount of $3,500, and injuring the rear brakeman of 305 and an employé of a connecting road, who was in the caboose, but doing no serious injury to any of the passengers. Train 305 being late, was running on the time of 315, and in clear violation of the rules of the company. These rules require that freight trains should in all cases keep 10 minutes off the time of regular passenger trains. Yet, when 305 left Wilmington there were only six minutes between the trains, and when 305 left East Billerica the express train 315 was only three to five minutes behind it. The collision occurred after 305 had slacked, and while the conductor was switching it off on a side track. Even then the accident would have been prevented if the rear brakeman had not failed to do his duty in flagging the rear of the train. The rules are explicit on this point, and require him to go half a mile—18 telegraph poles—to the rear whenever the train is delayed from any cause. This rule has been enforced within two months by discharging a brakeman who neglected to comply with it. The rules also make it the duty

of the conductor to protect his train by sending signals. It is his duty to see that the rear brakeman does his duty. But in this case it was impossible to do this. The train was on a curve; the rear car was not in sight from the front of the train. No signal could be given, and there was not time to send to the rear. But if the ten-minute rule had been observed there would have been time to send, if from any cause the train had been obliged to stop.

"There can be no question as to the fault in this case. 1. The engineer and conductor were clearly guilty of acting in utter disregard of rule. They took the chances of running in advance of a fast express train, and of running on the time of that train. The accident was a natural result of their disobedience, and it would have occurred sooner if the passenger train had not been late. Both have borne excellent characters, and have always been free from misadventure and from censure both on this road and elsewhere; but in this case they knowingly violated a wise regulation, and they thus imperiled the lives and limbs of many passengers.

"2. No blame whatever attaches to any one connected with the passenger train 315. This collision, which might have been serious, is only one more illustration of the fact that no amount of care in the framing of rules or in the selection of men will afford full insurance against accidents. The managers had done all that could be done to prevent this casualty. It occurred because men of tried capacity and fidelity violated well-defined and well-known regulations."

He Discharged the Brakeman.

"Next stop Fifty-second street," shouted the brakeman of an east-bound Pennsylvania Railroad train yesterday afternoon as the train left Overbrook station.

"No, it isn't," exclaimed a little old man of gray hair, a slouch hat and apparent respectability. "You know very well you're lying."

Every one in the car looked at the little old man, who continued seriously: "I repeat that the next station is not Fifty-second street, and that you know it. You are hired by a bloated corporation to tell lies and deceive the traveling public."

The brakeman grew scarlet. The old fellow's steady stare was too much for him, and he stammered out an apology: "Really," he said, "I think I'm right, sir; I've been on the road 25 years; but I wouldn't like to contradict you, as you seem to speak with such authority."

"These conductors are always making mistakes," remarked an old lady to a young one.

"Yes, ma'am," replied the other, sympathetically.

"Your excuses are ill-timed, sir, and I shall discharge you," replied the old gentleman, with cold severity.

"Perhaps you will give me your name, sir?" inquired the railroad employé, meekly.

"Name!" laughed a heavily-built man, who looked like a prize fighter, coming into the car. "I don't believe he knows it. He's quite insane, and I'm escorting him to the Norristown Hospital. He's perfectly harmless."

The brakeman retreated amid an unanimous grin. The train presently came to a full stop and the brakeman reappeared with a loud "Fifty-second street." The crowd laughed. The little old man glared fiercely at the brakeman and was just going to object, when the attendant managed to pacify him.—*Philadelphia Press, Dec. 29.*

A Safe Road.

The Georgia Railroad has now been in operation since 1833—52 years—and the claim is made that in all that time not a single person has been injured in a passenger car of the road. Accidents have occurred, of course, and 3 persons have been killed, but in each case the person killed was on the platform of the car. Probably no other railroad in the United States can show such a record.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Boston & Lowell, annual meeting, at the passenger station in Boston, at 10:30 a. m., on Jan. 6.

Cleveland & Pittsburgh, annual meeting, at the office in Cleveland, O., Jan. 6.

Columbus, Hocking Valley & Toledo, annual meeting, at the office in Columbus, O., Jan. 12.

Connecticut River, annual meeting, at the office in Springfield, Mass., Jan. 20, at noon.

New York, New Haven & Hartford, annual meeting, in New Haven, Conn., Jan. 13.

Philadelphia & Reading, annual meeting, at Association Hall, in Philadelphia, Jan. 11, at noon.

Philadelphia, Wilmington & Baltimore, annual meeting at the office in Wilmington, Del., Jan. 11.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Chicago, Rock Island & Pacific, 1¾ per cent., quarterly, payable Feb. 1, to stockholders of record on Dec. 29.

Chicago, St. Paul, Minneapolis & Omaha, 3 per cent., semi-annual, on the preferred stock, payable Jan. 20, to stockholders of record on Dec. 31.

Delaware, Lackawanna & Western, 1¾ per cent., quarterly, payable Jan. 20.

Flint & Pere Marquette, 2 per cent., semi-annual, on the preferred stock, payable Jan. 16, to stockholders of record on Dec. 26. The July dividend was 2 per cent., making 4 per cent. paid for 1885, against 7 per cent. for 1884.

Norwich & Worcester, 4 per cent., semi-annual, payable Jan. 11, to stockholders of record on Dec. 31.

Pittsburgh, Fort Wayne & Chicago, 1¾ per cent., quarterly, payable on special stock Jan. 2; on regular stock, Jan. 6.

Railroad and Technical Conventions.

Meeting and conventions of railroad associations and technical societies will be held as follows:

The *Master Car-Builders' Association Committee on Freight Train Brakes* will hold a meeting and hearing at the Lochiel House, in Harrisburg, Pa., on Wednesday, Jan. 6.

The *American Society of Civil Engineers* will hold its annual meeting at the Society's House, in New York, on Wednesday, Jan. 20.

The *Master Car-Builders' Club* will hold its regular monthly meetings through the winter at the rooms, No. 113 Liberty street, New York, on the evening of the third Thursday in each month.

The *New England Railroad Club* will hold its monthly meetings at its rooms in the Boston & Albany passenger station in Boston, on the evening of the second Wednesday in each month.

The *Western Railway Club* will hold its regular monthly meetings at its rooms, No. 103 Adams street in Chicago, on the third Wednesday in each month.

New England Railroad Club.

The New England Railroad Club will discuss the following subjects at their next meeting, which will be held at the Club Room, in the Boston & Albany passenger station, Boston, Jan. 13: "The Relative Merits of Steel and Iron in Locomotive Construction."

The meeting on Feb. 10 will be devoted to a discussion on "The Relation of the Road-bed to the Rolling Stock, and the Best Forms and Materials to use in their Construction." The members of the Boston Society of Civil Engineers have been specially invited to take part in this discussion.

Order of Railroad Conductors.

The Order of Railroad Conductors, it is stated, at a recent meeting in St. Louis appointed a committee to confer with the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and the Brakemen's Brotherhood in relation to the consolidation of the different societies. What the basis of consolidation proposed is, has not been made public; the object apparently is to consolidate the benefit or insurance divisions of the different associations in order that the combined society may receive the strength of great numbers. Whether there is any further object has not been stated, and it appears to be altogether uncertain whether the proposed consolidation will be accepted by the other societies.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio.—Mr. A. Gordon Jones is appointed Assistant to General Manager. He will have such duties as may be assigned him by the General Manager.

Mr. W. H. Harrison is appointed Superintendent of Motive Power, with headquarters at Baltimore, vice Mr. John C. Davis, resigned. Master mechanics on Trans-Ohio Division will report direct to the Superintendent of Motive Power.

Belleville & Northeastern.—The directors of this new company are: Edward Abend, Charles Becker, Joseph Fuess, Theophilus Harrison, Bernard Hartman, James M. Hay, John Kloss, Wm. B. Powell, Michael Reias, M. T. Stoakey, W. W. Waugh. Herman G. Weber, B. J. West, Belleville, Ill.; Henry S. Eiter, Lebanon, Ill.; J. F. Imbs, St. Louis.

Chicago, Burlington & Northern.—The following circular from President A. E. Touzalin is dated Jan. 1, 1886:

"The organization for the construction and operation of this company's road is: George B. Harris, General Manager, St. Paul, Minn.: W. H. Holcomb, General Superintendent, La Crosse, Wis.; C. C. Upham, Chief Engineer, St. Paul, Minn.; W. B. Lawson, Assistant Chief Engineer, La Crosse, Wis.; N. B. Hinckley, Auditor, St. Paul, Minn.; G. W. Traer, Cashier, St. Paul, Minn.; George Hargreaves, Purchasing Agent, Chicago."

Chicago, Evanston & Lake Superior.—The officers of this new company are: President, Jason C. Easton; directors, Julius Wadsworth, Philip Wadsworth, T. W. Wadsworth, Edwin Walker; Secretary and Treasurer, T. W. Wadsworth. Office in Chicago.

Chicago, Harlem & Batavia.—The corporators of this new company are: F. Borhold, John Crosse, F. W. Felde, A. C. Lanston, Otto Scheuneman, Franz Schack and Charles N. Scoers, all of Chicago.

Connecticut River.—Mr. E. C. Watson is appointed General Ticket Agent in place of C. H. Cram, resigned.

Elmira, Cortland & Northern.—Mr. George F. Randolph has been appointed General Freight and Passenger Agent in place of M. V. B. Myrtle, resigned. Mr. Randolph was formerly on the Missouri Pacific, but for two years past has been connected with the West Shore road.

Florida Railway & Navigation Co.—Mr. J. W. Bushnell has been appointed Master of Roadway, with office at Fernandina, Fla. His title heretofore has been Chief Engineer.

Georgetown & North Carolina.—At the annual meeting in Sumpter, S. C., recently, the following were chosen: President, J. D. Blanding; Directors, H. L. Baker, M. Barker, Richard Dozier, A. J. Wintermute.

Hartford & Connecticut Valley.—This company (controlled by the New York, New Haven & Hartford) has elected George H. Watrous, President; Samuel Babcock, Vice-President; Wm. C. Brainard, Secretary and Treasurer.

Hartford & Connecticut Western.—The new board has elected W. L. Gilbert President; Frederick Miles, Vice-President; E. R. Beardley, Secretary and Treasurer.

Illinois Central.—Mr. M. C. C. Markham has been appointed Assistant to the General Manager. He has been connected with the compay for 12 years past.

Kentucky & South Atlantic.—Mr. George B. Harper has been appointed Receiver by the United States Circuit Court. The line was formerly known as the Mt. Sterling Coal road.

Morris County.—The officers of this new company are President, Garrett A. Hobart, Paterson, N. J.; Secretary, Russell T. Low; Treasurer, Joseph A. Cunningham.

Natchez, Red River & Texas.—At a recent meeting the following directors were elected: Isaac Lowenburg, S. E. Rumble, R. F. Learned, H. R. Steele, Geo. W. Debevoise, Henry Frank, Louis Botto. The directors elected officers as follows: President, Hiram R. Steele; Vice-President, Rufus F. Larned; Secretary and Treasurer, George W. Debevoise.

New York & Connecticut Air Line.—Mr. H. R. Parrott has been elected President of this company. Mr. Parrott is Secretary of the Parrott Varnish Co., of Bridgeport, Conn., which, as an extensive manufacturing concern, has doubtless much interest in the construction of the new road.

New York District.—The directors of this new company are: Josiah L. Blackwell, I. Coleman Drayton, Sherburne B. Eaton, J. Ogden Hoffman, Adolph Ladenburg, Wm. B. Parsons, David Paton, George B. Post, George Renault, Wm. A. Street, Charles Spear, Richard W. Stevenson, Locke W. Winchester, all of New York city.

New York, Lake Erie & Western.—The following circular from Mr. S. Little, Comptroller, is dated New York, Jan. 1, 1886:

"The offices of Auditor, Assistant Auditor, Auditor of Freight Receipts, Auditor of Passenger Receipts, Superintendent of Station Accounts, Assistant Superintendent of Station Accounts (N. Y., L. E. & W. R. R.), Assistant Superintendent of Station Accounts (N. Y., P. & O. R. R.), having been abolished, the following appointments are made, to take effect on this date, viz.: A. J. McDowell, Auditor of Traffic; E. P. Campbell, Assistant Auditor of Traffic; W. Farrington, Assistant Comptroller; A. T. Cuddeback, Traveling Auditor, in charge of the stations on the New York, Lake Erie & Western Railroad (except the Western and the Buffalo & Southwestern divisions, and Bradford Branch), and the Tioga Railroad; C. W. Cone, Traveling Auditor, in charge of the stations on the New York, Pennsylvania & Ohio Railroad, and those on the Western and the Buffalo & Southwestern divisions and Bradford Branch of the New York, Lake Erie & Western.

"In all matters pertaining to accounts, agents and conductors will report to, and receive their instructions from the Auditor of Traffic. The traveling auditors will also report to and receive their instructions from him."

Mr. B. C. Stoddard is appointed General Foreman of the Susquehanna shops in place of Mr. F. P. Boatman, who has gone to the Ohio & Mississippi road.

New York & New England.—The new board has elected Mr. Charles P. Clarke, President. He was formerly President, and for two years past has been Receiver, a position which he vacates Dec. 31. His connection with the road dates back to 1871, when he was one of the Receivers of the Boston, Hartford & Erie, and after the reorganization he was General Manager from 1873 to 1879, when he left the road, but returned to it as President in 1883.

Ohio & Mississippi.—The following circular from Superintendent C. C. F. Bent is dated Cincinnati, Dec. 15:

"As provided for in revised and amended rules of date Oct., 1885, for conducting the Operating Department of this Co. The following appointments are hereby made and in effect Jan. 1, 1886: *Main Line* (Cincinnati to St. Louis, including Louisville Branch).—Mr. W. B. Ruggles, Master of Maintenance of Way (in addition to his duties as Chief Engineer); headquarters, Cincinnati, O., with jurisdiction on Springfield Division, so far as relates to M. W. standards, real estate matters and new work. Mr. C. B. Cole, Master of Transportation, headquarters, Seymour, Ind. Mr. F. P. Boatman, Master of Rolling Stock, headquarters, Vincennes, Ind.

"*Springfield Division.*—Mr. C. M. Stanton, Assistant Superintendent in charge of Maintenance of Way, Transportation and Rolling Stock Departments, headquarters, Springfield, Ill.

"All titles of position in conflict with the above are hereby made void. Employés will be governed accordingly."

Plymouth.—At the annual meeting in Philadelphia, Dec. 13, the following managers were chosen: James Boyd, Richard Dale, George W. Longacre, John Slingluff, Edwin Swift, I. V. Williamson.

Rome, Watertown & Ogdensburg.—At the annual meeting, Dec. 28, the following directors were chosen: Clarence S. Day, Henry Day, John S. Farlow, Walton Ferguson, John Q. A. Johnson, Josiah Lasell, Wm. Lummis, Lucius Lyon, Charles Parsons, Charles Parsons, Jr., Edwin Parsons, George Parsons, Wm. M. White.

St. Louis & Hannibal.—The following from General Manager E. C. Case is dated Hannibal, Mo., Dec. 19:

"This company takes possession of the property heretofore known as the St. Louis, Hannibal & Keokuk Railroad this day, and will henceforth operate the road under the above name.

"The following appointments are hereby made, to take effect this date: W. W. Driggs, General Freight and Ticket Agent; F. C. Cake, Jr., Cashier and Auditor; P. E. Fisher, Train Dispatcher; all of the above with headquarters at Hannibal, Mo.; Munson T. Case, General Agent; office at 114 North Fourth street, St. Louis; W. I. Brokaw, Master Mechanic, headquarters at Missouri Pacific Junction.

"All employés of the Receiver will continue to perform their respective duties as heretofore, considering themselves in the employ of this company from this date.

"Connecting lines, express companies, etc., are requested to report to this company revenue on all business dated on and after Dec. 19."

St. Paul & St. Croix Falls.—The directors of this new company are: Henry A. Boardman, Wm. Davidson, Jr., Frank B. Gilson, T. Kavanaugh, Edmund Rice, Jr. Office in St. Paul, Minnesota.

San Francisco & Clear Lake.—The officers of this new company are: President, J. D. Thompson, San Francisco; Vice-President, W. H. Hart, San Francisco; Secretary and Treasurer, W. H. Sears, San Rafael, California.

Western North Carolina.—The following circular from General Manager E. B. Thomas is dated Richmond, Va., Dec. 19:

"On Jan. 1, 1886, the office of the Superintendent of the Western North Carolina Railroad (with Master of Trains, dispatchers, etc.), now located at Salisbury, N. C., will be moved to Asheville, N. C., to which place official communications to him should be addressed."

PERSONAL.

—It is reported that Mr. George W. Ristine has tendered his resignation of his position as General Traffic Manager of the Atlantic & Pacific road.

—Mr. T. A. Lewis has resigned his position as Manager of the Erie fast freight lines on account of continued ill health. Mr. Lewis has held his position for 21 years.

—Mr. M. E. Gray has retired from the position of Superintendent of the Columbus & Rome Railroad, the board of directors having decided to abolish that office on Jan. 1, 1886.

—Mr. Charles H. Cram has resigned his position as General Ticket Agent of the Connecticut River road. He has been in the service of the company for 21 years and has been General Ticket Agent since 1881.

—Mr. James Edwin Hatton, one of the oldest locomotive engineers in the country, died at his home in Jersey City, Dec. 26, of pneumonia. He first entered the service of the old New Jersey Railroad & Transportation Co. in 1837, and, except for about a year, had been up to the time of his death in the employ of the company and of the Pennsylvania Railroad Co., lessee, having thus run over the road for over 48 years. Very few engineers can show so long a term of service, and it is doubtful whether any can show so long a period passed on one road.

—Mr. Charles A. Craig died suddenly at his home in Danbury, Conn., Dec. 24, aged 70 years. He learned the trade of machinist at the Rogers Locomotive Works in Paterson, N. J., and worked there a number of years. In 1842 he was made foreman of the Housatonic Railroad shops at Bridgeport, Conn., and remained there 11 years. Subsequently he was employed on the Naugatuck and the Pennsylvania railroads, and in 1862 he was appointed Master Mechanic of the Danbury & Norwalk road. He held that position until 1876, when he retired altogether from business.

TRAFFIC AND EARNINGS.

Coal.

Coal tonnages for the week ending Dec. 19 are reported as follows:

	1885.	1884.	Inc or Dec.	P.c.
Anthracite	687,672	739,884	D. 52,212	7.1
Eastern bituminous	177,547	158,307	I. 19,240	12.2
Coke	75,800	47,814	I. 27,986	58.3

No action has yet been taken as to an agreement among the anthracite companies for 1886. The course of the Reading is yet uncertain, and it is reported that the Lehigh Valley and the Lackawanna are disposed to demand an increased

share of the trade, while the Pennsylvania Railroad Co. will not join in any agreement.

Pennsylvania Railroad coal tonnage for the week ending Dec. 19 was:

	Coal.	Coke.	Total.	1884
Line of road.....	169,051	54,738	243,789	189,817
From other lines.....	107,497	1,062	108,559	69,622
Total.....	276,548	75,800	352,348	259,439
Year to Dec. 19.....	11,130,506	2,573,137	13,703,643	12,947,025

Increase for the week, 92,909 tons, or 35.8 per cent.; increase for the year, 756,618 tons, or 5.8 per cent.

Coal shipments from the mines on the Great Kanawha River, in West Virginia, for the year ending June 30 are reported as below, in bushels:

	1884-85.	1883-84.	Inc. or Dec.	P. c.
By river	17,812,323	18,421,084	D. 608,761	3.3
By rail.....	12,972,217	12,059,172	I. 913,045	7.6
Total.....	30,784,540	30,480,256	I. 304,284	1.0

The rail shipments were 42.1 per cent. of the total last year, against 39.5 per cent. in the preceding year.

Cumberland coal shipments for the week ending Dec. 19 were 39,762 tons. Total to Dec. 19 this year, 2,715,444; last year, 2,802,302; decrease, 86,858 tons, or 3.1 per cent.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

	1885.	1884.	Inc. or Dec.	P.c
Year to Dec. 31:				
Chi., Mil. & St. P.	$24,378,882	$23,470,998	I. $907,884	3.9
Eleven months to Nov. 30:				
Balt. & Potomac.	$1,215 246	$1,124,434	I. $90,812	8.1
Net earnings...	501,710	368.707	I. 133,003	36.1
E. Ten., Va. & G.	3,710,593	3,616,819	I. 93,774	2 6
Net earnings..	1,226,989	1,343.274	D. 116,285	8.6
N. Y., Sus. & W.	1,005,949	946,524	I. 59,425	6 3
Norfolk & West..	2,521,688	2,464,050	I. 57,638	2 3
Net earnings...	1,011,980	1,078,680	D. 66,700	6 1
Northern Central.	4,983,222	5,079,608	D. 96,386	1.9
Net earnings...	2,014,054	1,964,264	I. 49,790	2.5
Pennsylvania.....	41,568,347	44.797,586	D. 3,229 239	7.2
Net earnings...	14,776,070	16,943.674	D. 2,167.604	12.8
West Jersey	1,199.147	1,236,518	D. 37,371	3 0
Net earnings ..	462,084	500,459	D. 38,375	7.7
Ten months to Oct. 31:				
California South.	$119,789	.....	.....	....
Net earnings..	3,210	.....	.....	...
Month of October:				
California South.	$15,328	.....	.....	....
Net earnings...	3,215	.....	.....	....
Month of November:				
Balt. & Potomac.	$115,831	$106.849	I. $8,982	8.4
Net earnings...	56,677	31,372	I. 25,305	81.5
E. Ten., Va. & G.	400,781	380,180	I. 20,601	5.4
Net earnings...	165,956	149,645	I. 16,311	10.9
N. Y., Sus. & W..	97,344	97,275	I. 69	0 1
Norfolk & West..	270,648	244,810	I. 25,838	10.1
Net earnings...	116,731	115,068	I. 1,668	1.4
Northern Cen. ..	483,593	474,805	I. 8,788	1.9
Net earnings...	207,928	193 497	I. 14,531	7.5
Pennsylvania... ..	3,971,540	3,950,938	I. 20.602	0.5
Net earnings ..	1,616,285	1,475.711	I. 140,574	9 5
West Jersey.....	85,381	82,841	I. 2,540	3 1
Net earnings...	30,702	32,563	D. 1,861	5.7
Month of December:				
Chi., Mil. & St. P.	$2,301,815	$2,218,998	I. 82,817	3.7
Third week in December:				
Buff., R. & Pitts.	$24,469	$20,989	I. $3,480	16.6
Bur., C. R. & No.	67,344	64,650	I. 2,694	4.1
Chi. & East. Ill..	44,227	33,400	I. 10,827	32.4
Chi. & Nor'west.	477,400	421.300	I. 56,100	13.3
C., St. P., M. & O.	105,400	94,500	I. 10,900	11 5
C., I., St. L. & C.	47,279	46,233	I. 1,046	2.3
Den & R. G.... ..	113,796	95,145	I. 18,651	19.6
Det., Lan. & No	21,986	15,844	I. 5.842	36.5
Illinois Central ..	322,800	281,223	I. 41,577	14.8
Iowa lines. ...	45,000	33,922	I. 11,078	32.6
Long Island.....	45,363	41,988	I. 3 375	8.0
Louisv. & Nash..	271,495	286,490	D. 14.995	5.2
Mil. & Northern.	10,885	10,240	I. 645	6.3
St. L. & San F..	80,200	81.600	D. 1,400	1.7

Weekly earnings are usually estimated in part, and are subject to correction by later statements. The same remark applies to early statements of monthly earnings.

Cotton.

Cotton movement for the week ending Dec. 24 is reported as follows, in bales:

Interior markets:	1885.	1884.	Inc. or Dec.	P c.
Receipts....	149,614	105,360	I. 44,254	42.1
Shipments....	109,534	105,706	I 3,828	3 6
Stock, Dec 24.	521,319	363,520	I. 157,799	43.3
Seaports:				
Receipts.	208,981	207,983	I 998	0.5
Exports	142,577	134,906	I. 7,671	5.7
Stock, Dec. 24.....	1,057,049	1,047.428	I. 9,621	0.9

The total movement from plantations for the crop year (from Sept. 1) to Dec. 24 is estimated at 4,321,811 bales; the increase, as compared with last year, is 132,210 bales, the increase as compared with 1883 is 184,055 bales, and the increase over 1882 is 162,867 bales.

New York Railroad Earnings.

Earnings of New York railroad lines for the year ending Sept. 30 have been reported to the Railroad Commission as follows:

	Earnings.	Expenses.	Net earnings.
Del., Lacka. & Western....	$4,872,596	$2,059,367	$2,813,429
1883-84	5.389,148	3.103,640	2,285,508
Dunkirk, All. Vy. & Pitts..	216,796	214,337	2,459
1883-84.....	279.719	300,920	*21,201
Elmira, Cortland & No....	325,146	246,061	79,085
1883-84.....	274,496	416,464	*141,968
N. Y., Ontario & Western.	1,900,275	1,563,960	336,315
1883-84.....	1,879,173	1,754,630	124,539
Northern, of N. J.....	307,628	221,174	86,454
1883-84.....	295,410	216,411	79,999
Roch. & Ontario Belt.	5,842	6,298	*456
1883-4..	8,266	7,908	358
Rome, Watertown & Og....	1,663,437	1,055,758	607,679
1883-84	1,691,753	1,152,749	539,004
Skaneateles.....	23,348	15,640	7,708
1883-84	23,201	18,180	5,021
Syracuse, Bing. & N. Y....	690,934	362,241	328,693
1883-84	808,934	464,649	344,285
Ulster & Delaware...	325,836	203,660	122,176
1883-84.....	317,828	236,480	81,348
Utica & Black River.....	796,031	416,230	379,801
1883-84.....	830,885	598,512	232,373

*Deficit.

The Delaware, Lackawanna & Western statement covers all the lines leased by that company in the state of New York.

Southern Passenger Committee.

The Southern Passenger Committee met in Atlanta, Ga., Dec. 28. No quorum being present, an adjournment was had until the next day, when it was expected that other members would arrive. Several important questions are to be discussed, principally referring to difficulties growing out of the restoration of rates and to the disposition to be made of contracts made to carry passengers at reduced rates before the restoration took place.

Commissions on Passenger Business.

The lines in the Colorado Railway Association have issued a circular to Eastern connections, asking that in future no commission on passenger business be paid to ticket agents in the territory of the association. The circular promises that the interests of Eastern connecting lines shall be protected, and threatens the adoption of stringent measures in case the payment of commissions is continued.

Chicago Live Stock Shipments.

From May 1 to Nov. 30, 1885, there were shipped from Chicago to the East 211,322 tons of cattle, 125,907 tons of hogs, 3,885 tons of sheep, 5,830 tons of horses and mules, and 145,094 tons of dressed beef, a total of 491,938 tons. These shipments were divided as follows:

Roads.	—Dressed beef.— Tons.	Per cent.	—All classes.— Tons.	Per cent.	Allot'd per cent
C. & G. T.....	86,093	59.3	88,489	18 0	20.5
Mich. Cen.....	6,661	4.6	106,108	21.6	16.5
Lake Shore.....	5,384	3.7	108,633	22 1	22 9
P., Ft. W. & C	11,003	7.6	95,725	17.4	11.3
C., St. L. & P.....	3,934	2.7	22,614	4.6	6.5
B. & O	7,863	5.4	18,065	3.7	4.7
N. Y., C. & St. L....	24,146	16.7	36,904	7.5	8.8
Chicago & Atlantic.	10	....	15,400	3.1	8.8
Totals	145,994	100.0	491,938	100.0	100.0

The total revenue from these shipments was $1,432,406. On the revenue basis the Chicago & Grand Trunk, the Michigan Central, the Fort Wayne and the Nickel Plate were over their allotments, the other roads falling short.

RAILROAD LAW.

Liability for Baggage Lost.

In the case of Wimberly against the Rome Railroad Co., the Georgia Supreme Court decides as follows, affirming the decision of the lower court against the company:

1. So long as the custody of baggage is incident either to a past or prospective transportation of the passenger, the company must be regarded at least as a bailee for hire, the fare paid extending to both the transportation of the passenger and his baggage, and the storage of the latter for a reasonable time thereafter, so as to meet any ordinary exigency of travel, and to recover for the loss of such baggage, it would not be necessary to show gross neglect.

A passenger traveled a portion of the way to her destination by one railroad, and on the next morning resumed her route by another connecting road, which used the same baggage-room and platform as the first, her trunk remaining in the baggage-room all night, and she retaining the check, and before the train on the second road left, an employé of the first took the check, agreeing to place the trunk in proper position for transportation, but on reaching her destination, it was found not to have been put on board the train. On inquiry at the depot, the agent of the first road stated that the trunk had been left, and had been put back in the baggage-room. On demand for it, it could not be found, and suit was brought:

Held, that the storage of the trunk for a night was not an unreasonable length of time, and if it was removed the next morning from the room to the platform for the purpose of being sent forward with the passenger on the other road, and the company's agent undertook to perform this duty, but neglected it, the company would be liable, if not as a common carrier, for want of extraordinary care, at least as a bailee for hire, for want of ordinary care.

2. The company could not relieve itself of responsibility without in some manner accounting for the loss of the trunk and showing how it left its custody. Its failure to do this would warrant the inference that the trunk was stolen by its servants or was lost in consequence of their gross neglect. Nor is the charge of negligence fully met by evidence produced to show that the building used for the storage of baggage was safe and secure, in charge of trusty agents and servants, and properly guarded by day and night.

OLD AND NEW ROADS.

Atchison, Topeka & Santa Fe.—The proposed extension of the Walnut Valley Branch from Douglas to Winfield has already been referred to. It is now said that the company will build a cut-off from Emporia to Eldorado, which will complete a very direct line from Kansas City to Arkansas City. It is understood that the company will shortly begin work on its line from Arkansas City southward across the Indian Territory. By the terms of the grant 100 miles of this line must be built during the present year.

The temporary injunction obtained in the court at Topeka, Kan., to restrain this company from paying interest on the Sonora Railroad bonds, which it guarantees, has been modified by the Supreme Court, so as to permit the payment of the January interest, so that there will be no default on the coupons. The case will come up shortly for argument on the continuance of the injunction.

Baltimore & Potomac.—This company's statement for November and the eleven months to Nov. 31 is as follows:

	—November.— 1885.	1884.	—Eleven months.— 1885.	1884.
Earnings...	$115,831	$106,849	$2,215,246	$1,124,434
Expenses.....	59,154	75,477	713,536	755,727
Net earnings....	$56,677	$31,372	$501,710	$368,707

For the eleven months the gross earnings increased $90,812, or 8.1 per cent., while the expenses decreased $42,191, or 5.6 per cent., the result being a gain of $133,003, or 36.1 per cent., in net earnings.

Beech Creek, Clearfield & Southwestern.—A meeting of the stockholders' committee was held in New York, Dec. 28. No action was taken, but it was stated that the stockholders had generally responded favorably to the proposition to raise $1,300,000 for the purpose of paying off the floating debt.

Belleville & Northeastern.—This company has been organized to build a railroad from Belleville, Ill., through Lebanon, to Litchfield. The capital stock is to be $500,000, and the company's office is at Belleville. The road is apparently projected to carry coal from the mines about Belleville.

Boston & Albany.—This company has placed its dining-car service under the management of S. H. Moseley & Son, who now have charge of the railroad restaurant at New Haven and also of the New Haven Hotel, and who formerly managed the Massassoit House at Springfield. The company will retain the general supervision of the service and prices on these cars.

Buffalo, New York & Philadelphia.—The statement for November and the two months of the fiscal year from Oct. 1 to Nov. 30 is as follows:

	—November.— 1885.	1884.	—Two months.— 1885.	1884.
Earnings..... ...	$211,028	$190,061	$451,690	$430,637
Expenses	154,307	150,537	332,306	302,599
Net earnings..	$56,721	$39,524	$119,384	$128,038

The two months show an increase in gross earnings of $21,053, or 4.9 per cent., and an increase in expenses of $29,707, or 9.7 per cent., leaving a decrease of $8,654, or 6.9 per cent., in net earnings.

California Southern.—The earnings of this road for October and the ten months to Oct. 31 were:

	October.	Ten months.
Earnings	$15,328	$119,789
Expenses	12,113	116,579
Net earnings.....	$3,215	$3 210
Per cent. of expenses.....	79.0	97.3

No part of the extension to the Atlantic & Pacific road was operated during the ten months. The road was not opened in 1884, having been closed by disastrous wash-outs; compared with 1883 the earnings for the ten months increased $43,702, or 57.5 per cent., and the expenses $44,246, or 61.4 per cent., leaving a decrease of $544, or 14.5 per cent., in net earnings.

Central, of New Jersey.—Before the Master in the suit to set aside the lease to the Reading, in Philadelphia, Dec. 28, Comptroller Jones, of the Reading, presented a statement showing that prior to the order of the Court requiring the Reading to turn over to the Central the net earnings of that company, the Reading had paid $358,891 more than the net earnings of the Central. A statement was also put in by Accountants Williams, of the Reading, and Waterman, of the Central, showing that from April 1 to Nov. 30, 1885, the net earnings of the Central lines were $3,417,383. The payments by the Reading to the Central on account of these receipts have amounted to $3,230,359, leaving a balance of $187,024, which is now in the hands of the Reading Receivers and applicable to the payment of obligations arising under the lease. The argument of the case was then begun by counsel.

Central Pacific.—The track of the Oregon Division is now laid to Slate Creek, Cal., 10 miles northward of the late terminus at Delta and 218 miles from Sacramento. The work on the grading is now in progress for some distance north of Slate Creek.

Chicago, Burlington & Northern.—The Illinois Central Co. has filed a bill in the United States Court in Chicago asking for an injunction to prevent this company from building a line parallel to the Illinois Central tracks from Portage to East Dubuque. The bill represents that the Central track is built on a narrow ledge between the bluffs and the river and that there is no room for other tracks parallel to it. It represents that the Illinois Central has offered the new road the use of its track for a bare rental, but this offer has not been accepted. It is further represented that a double track will soon be needed on this portion of the road, and if the new parallel line is built there will be no room for the construction of the additional track.

Chicago, Burlington & Quincy.—It is reported that this company will soon begin work on two branches or extensions of its Burlington & Missouri River line in Nebraska. One will be an extension of the Grand Island branch from Grand Island to Broken Bow, in Custer County, a distance of about 100 miles. The other branch will be a shorter line from Tobias west to Nelson.

Chicago & Central Iowa.—This company has filed articles of incorporation to build a railroad from Lacon, Ill., the terminus of a branch of the Chicago & Alton road, westward 80 miles to Keithsburg, where the Central Iowa Co. has just completed a bridge over the Mississippi.

Chicago, Evanston & Lake Superior.—This company has been formed by the consolidation of the Chicago & Evanston and the Chicago & Lake Superior roads. The former line is completed from Chicago northward about 10 miles. The consolidated company proposes extending the road to Lake Geneva, Wis., with a branch from Lake Forest, Ill., northward to the Wisconsin line, making 79 miles of road in all.

Chicago, Harlem & Batavia.—The Chicago *Inter-Ocean* says: "A new corporation, known as the Chicago, Harlem & Batavia Railway Co., has been formed with $100,000 capital stock. The incorporators are given as A. C. Lausten, John Crosse, Otto Scheuneman, F. W. Felde, Charles N. Scoers, F. Borbold and Franz Schack. This company proposes to buy the dummy line, and then extend the new line from its terminus near Harlem, to Batavia, in Kane County, a distance of over 40 miles. This line will prove of great value to the suburban interests of Chicago."

Chicago & Indiana Coal.—This organization, which was formed some time ago, and which has acquired the Chicago & Great Southern road, is now at work in extending that road from its present terminus at Yeddo, Ind., southward to Brazil, about 40 miles. The company has recently given orders for a number of locomotives and cars, and is making other preparations for business. Some delays have been experienced on account of litigation over the right of way and railroad crossings. The Great Southern road now extends from Fair Oaks, Ind., on the Louisville, New Albany & Chicago, southward to Yeddo, 76 miles. In addition to the extension to Brazil, the company intends to build branches to Danville, Ill., and from Fair Oaks to La Porte, Ind., to connect with the Chicago & Western Michigan road.

Chicago & Northwestern.—This company announces the opening for business on Dec. 28 of the new branch of its Dakota Central line, extending from Centreville, Dak., southwest to Yankton, a distance of 28.4 miles. The stations on the new branch, with the distances from Centreville, are Wakond, 10.5; Violin Siding, 16.4; and Yankton, 28.4.

Chicago, Rock Island & Pacific.—Track is reported all laid on this company's new St. Joseph branch. The branch extends from Winston, Mo., on the Southwestern Division, west by south to St. Joseph, and is 48½ miles long in all. An extension of this branch on the west side of the Missouri River is in progress.

Cleveland, Mt. Vernon & Delaware.—This road will be transferred by the Receiver on Jan. 1 to the Cleveland, Akron & Columbus Co. The road was sold under foreclosure in 1881, when the new company was organized, but the receivership was continued pending proceedings to set aside the sale, which are now terminated. The road extends from Hudson, O., to Columbus, 144 miles.

Coalport & Cresson.—This new line is now about completed and will be open for traffic early in January. It is an extension of the Bell's Gap road, extending from Coalport on that road, along Clearfield Creek to Cresson, a distance of 26

miles. It will open up to market a large amount of lumber and will also run through an extensive tract of coal land, on which mining operations have already been begun.

Croton Valley.—This company has filed articles of incorporation to build a railroad from Croton Lake station on the New York City & Northern road, along the Croton River to its mouth on the Hudson. The distance is about 8 miles.

East Tennessee, Virginia & Georgia.—A new issue has been raised by the filing in the foreclosure suit of a cross bill by the trustees of the old second mortgage, made by the Macon & Brunswick Railroad Co. in 1868, under which $1,100,000 in bonds were issued. The Macon & Brunswick Railroad was taken by the state of Georgia to satisfy its claims upon the guaranteed bonds, and was subsequently sold by the state to the East Tennessee, Virginia & Georgia Co. The trustees now claim that the sale of the road by the state was made without due process of law, and that they were not made parties, or their rights foreclosed, and that their mortgages consequently are still a lien upon the property prior to the consolidated mortgage made by the East Tennessee Co. The bill raises some nice questions of law, and their settlement will involve a good deal of litigation.

The statement for November and the five months of the fiscal year, from July 1 to Nov. 30, is as follows:

	November		Five months	
	1885.	1884	1885.	1884.
Earnings	$400.781	$380 180	$1.818.905	$1,752,540
Expenses	234,825	230,535	1.034,034	1.027,931
Net earnings	$165,956	$149,645	$784 871	$724,609

For the five months the gross earnings increased $66,365, or 3.8 per cent., and the expenses $6,103, or 0.6 per cent., the resnlt being a gain of $60,262, or 8.3 per cent., in net earnings.

Ft. Worth & New Orleans.—Grading is now in progress on this road from Ft. Worth, Tex., toward Waxahachie, and a considerable amount of material has been purchased. Some rails have already been received and the ties and bridge timber are being delivered along the line. Tracklaying will shortly be begun at Ft Worth.

Fremont, Elkhorn & Missouri Valley.—The new Black Hills line of this road, after running westward from Norfolk, Neb., to Chadron, turns almost due north from that point, running up towards the Black Hills region in Dakota. It is now announced that a new contract has been let for an extension running from Chadron nearly due west to Fort Fetterman in Wyoming, a distance of about 90 miles, the work to be completed by Sept. 1 next. This extension will carry the road into the cattle region of Northern Wyoming, and may also be used as part of an extension to Ogden, should the Chicago & Northwestern, which controls this company, decide to build such a line.

Georgetown & North Carolina.—At a recent meeting of the stockholders, all action hitherto taken in regard to the building of a narrow-gauge road was rescinded. Amendments to the charter to change the road to a broad-gauge road were accepted, and Charleston was decided on as to the terminal point. The President was authorized to get a bill through the Legislature amending the charter as follows: To change the name from Georgetown & North Carolina to Charleston, Cincinnati & Chicago; to increase the capital stock from $2,000,000 not to exceed $5,000,000; to repeal certain clauses in the original charter, referring to subscriptions and loans, under which counties had voted.

It was resolved that the company should issue first-mortgage bonds not to exceed $20,000 per mile of the road, to run for 30 years, bearing an interest of 8 per cent., payable semi-annually. The President was authorized to enter into an agreement with the Boston Safe Deposit & Trust Co. to act as trustee of the said mortgages to secure them for the construction of the road through South Carolina, or such portions as the directors shall from time to time order. The President and directors were authorized to enter into an agreement with the Massachusetts & Southern Construction Co. for building and equipping the road; also to fix the terms of the agreement.

Greenfield.—Track is reported laid on this road, which is 3½ miles long, extending from Greenfield, Mo., southward to a junction with the Kansas City, Ft. Scott & Gulf road.

Gulf, Colorado & Santa Fe.—The track is now all laid on the extension of this road from Lampasas, Tex., to Brownwood, and trains will run to the new terminus on Jan. 1. Brownwood is 74 miles from Lampasas and 348 miles from Galveston.

Illinois Central.—Work is progressing favorably on the extension of the Yazoo City branch, from Yazoo City, Miss., northward. The grading will be completed to the Yallabusha River by the middle of February, and the bridging, which is an important part of the work, will probably be finished a month later.

Jamesville & Washington.—It is said that the sale of this road to Philadelphia parties has been completed, and they are shortly to take possession. It is understood that the purchasers are largely interested in the New York, Philadelphia & Norfolk road, and that they purpose extending this road from Jamesville, N. C., to Suffolk, Va., where it will connect with the Seaboard & Roanoke road, and also from Washington southward to Newberne, making it partly a line from Norfolk to Newberne. The road now extends from Jamesville, on the Roanoke, southward to Washington on Tar River, 22 miles.

Kansas City & Southwestern.—Track on this road is now laid to Cale, Kan., which is close to the Indian Territory line and 6 miles beyond the terminus at Arkansas City. The total length of the line from Beaumont, Kan., southwest to Cale, is now 75 miles.

It is announced that the road has been leased to the St. Louis & San Francisco Co., with whose line it connects at Beaumont, and that it will be operated as the Winfield branch of that road from Jan. 1.

Kentucky & South Atlantic.—The United States Circuit Court at Covington, Ky., has appointed a receiver for this road in a suit for foreclosure of mortgage begun by the trustee. The road, formerly known as the Mt. Sterling coal road, is in operation from Mt. Sterling, Ky., to Rothwell, 20 miles. By the last report the company had $124,000 bonds and about $116,000 floating debt.

Mexican Railroad Notes.—The following notes are from the *Mexican Financier* of Dec. 19:

The non-interruption of railroad traffic in Nuevo Leon during the troubles there will give renewed confidence to outside investors, in the conditions of civil order here.

A narrow gauge railroad is to connect Villadama, state of Nuevo Leon, with the Guadalupe mine. Connection will be made with the Mexican National road.

The news that the Mexican National Co. was arranging to purchase the iron bridge materials of the International railroad at Laredo as well as the roadway from that point through Mier to Linares for $300,000 has not, says the *Revista* of Monterey, been favorably received in Brownsville. The road from Matamoras to Monterey is in regular operation to San Miguel de las Cuevas, 18 miles distant from Camargo. The employés of the railway are aware that the company will very soon be obliged to undertake anew the construction of the road, but it is feared that the company may use the rails which it has stored to extend them in the direction from Laredo to Mier, and thence to Linares over the forfeited way of the International which the company has acquired. This would isolate Matamoros from its rapid business communication with the up-river country in favor of Nuevo Laredo and would take away from it every chance of competition until the company should complete the construction of the branch of 33 miles from San Miguel via Camargo to Linares, which is not like soon to be done. The acquisition of the Gould concession by the Mexican National is, on the other hand a very good stroke for the company, giving it an excellent iron bridge at a very moderate cost.

Marquette, Houghton & Ontonagon.—Work, it is stated, will shortly be begun on the extension of this road to Ontonagon, Mich. The Michigan Legislature extended the time for the land grant, but the last extension will expire in January, 1886, and work must be begun very shortly in order to save it. It is thought that the extension will leave the main line at Pilgrim River, 3 miles south of Houghton.

Midland, of Indiana.—Track on this road is now reported laid from the late terminus at Westfield, Ind., west 4 miles, and from Lebanon, Ind., east 7 miles, leaving a gap of 10 miles, which will be completed as soon as the rails are received. The road will then be 49 miles long, from Anderson, Ind., west to Lebanon.

Mobile & Ohio.—The holders of preferred debentures will meet at the company's office in New York, Jan. 9, to vote on the question of approving the lease of the St. Louis & Cairo road by this company. The lease has already been referred to; it will give the company control of a line through to St. Louis.

Morris County.—This company has been organized to build a railroad from Charlotteburg, N. J., southward to Port Oram, a distance of 14 miles. The new company will purchase the Charlotteburg & Green Lake road, which now runs from Charlotteburg to the Green Pond mines, a distance of 4 miles, and will build the remaining 10 miles. The stock of the company is fixed at $400,000, and it will also issue $400,000 in bonds. The new road will reach a number of iron mines and will, in fact, run for nearly its whole length through a country abounding in iron ore. It will connect at Charlotteburg with the New York, Susquehanna & Western road, and the incorporators include several gentlemen largely interested in that road, besides others who own iron mines on the line.

New York, Chicago & St. Louis.—The Receiver's statement for the period from the date of his appointment, March 29, to Sept. 30, is as follows:

Earnings	$1,449,245
Expenses (78.5 per cent.)	1,137,750
Net earnings	$311,495
Rentals and taxes on property	199,527
Balance	$111,968

Betterments of road are reported at $4,874 and of equipment at $4,878, making a total of $9,752 on this account.

New York District.—This company has filed articles of incorporation at Albany to build an underground railroad from the Battery in New York city, under Broadway and Madison avenue to the Harlem River, and thence to a point where connection can be made with the various railroads entering the city from the north. A branch under Broadway from Twenty-third to Fifty-ninth streets, and one through Fourteenth street to the Hudson River are also proposed. It is not intended to tunnel under the streets, but simply to make an open cut the width of the streets and then arch it over, restoring the roadway to its original condition. It is proposed to make the excavation wide enough for four tracks and to build on either side, outside of the tracks, galleries sufficently large to contain the sewer, water, steam, gas pipes and telegraph and electric light wires. The general plan of construction suggested is somewhat similar to that of the Arcade Railroad, which was much discussed some years ago, but has, it is claimed, important advantages over the Arcade plan.

New York & New England.—This company's lease of the Springfield & New London road, which extends from Springfield, Mass., to the Connecticut line and forms part of the Springfield Branch, expired Dec. 31. The company considers that it has been paying too high a rental and negotiations have been in progress for a rental at a reduced rent. So far no agreement has been reached, but the company will continue to operate the road temporarily until some permanent arrangement is made. This road is about 3½ miles long and is chiefly owned by the city of Springfield.

Norfolk & Virginia Beach.—This company has made arrangements under which the creditors have been paid off in full, and the court has accordingly made the decree discharging the receiver and restoring the property to the company. The road is a narrow-gauge line extending from Norfolk, Va., to Virginia Beach, on the ocean shore below Cape Henry, and the company also owns a large hotel at the terminus.

Northern Central.—This company's statement for November and the eleven months to Nov. 30 is as follows:

	November.		Eleven months.	
	1885.	1884.	1885.	1884.
Earnings	$483,593	$474,805	$4,983,222	$5,079,608
Expenses	275,665	281,308	2,969,168	3,115,344
Net earnings	$207,928	$193,497	$2.014,054	$1.964,264

November shows an increase in gross earnings of $8,788, or 1.9 per cent., and in net earnings of $14,431, or 7.5 per cent. For the eleven months the gross earnings decreased $96,386, or 1.9 per cent., and the expenses $146,176, or 4.7 per cent. leaving a gain of $49,790, or 2.5 per cent., in net earnings.

Ogdensburg & Lake Champlain.—It will be remembered that some years ago holders of income bonds of this company obtained from the United States Supreme Court an injunction restraining the company from paying interest on the bonds of the Lamoille Valley Extension Co., on the ground that its guarantee of these bonds was illegal and unjust to the holders of the income bonds. Subsequently the trustees under the Lamoille Valley Extension mortgage made a motion to have the injunction dissolved. The Supreme Court has now given its decision, refusing to dissolve the injunction.

Ohio & Mississippi.—A meeting of Springfield Division bondholders was held in Baltimore, Dec. 28. A committee appointed at the meeting held on Dec. 23 presented a report, and the bondholders affirmed their former action and again voted to reject the company's offer to issue new 5 per cent. bonds secured on the main line in place of Springfield Division bonds.

Old Colony.—Two surveys have been made for the proposed line from South Framingham, Mass., to Mattapan, which is to connect the Northern Division with Boston by an independent line, avoiding the use of the Boston & Albany tracks. The final location has not been decided on.

The company has ordered 15 new passenger cars to be built in time for the summer business. Reports are in circulation that the company will lease the Nantasket Beach road, but they do not appear to have much foundation.

Pennsylvania.—This company's statement for November shows for all lines east of Pittsburgh and Erie, as compared with the same month in 1884, an increase in gross earnings of $20,602, a decrease in expenses of $119,972, and an increase in net earnings of $140,574. The eleven months to Nov. 30, as compared with the same period of 1884, show, for the same lines, a decrease in gross earnings of $3,229,239, a decrease in expenses of $1,061,635, and a decrease in net earnings of $2,167,604.

Carrying out these differences, we have the following statement:

	November.		Eleven months.	
	1885.	1884.	1885.	1884.
Earnings	$3,971,540	$3,950,938	$41,568,347	$44,797,586
Expenses	2,355,255	2,475,227	26,792,277	27,853,912
Net earnings	$1,616,285	$1,475.711	$14,776.070	$16,943.674
Per cent. of exps.	59.3	62.6	64.5	62.2

All lines west of Pittsburgh and Erie for the eleven months of 1885 show a deficiency in meeting all liabilities of $1,246,292, being an increased deficiency as compared with the same period of 1884 of $515,161. The total net decrease on all lines is thus $2,682,765 for the eleven months.

Pensacola, Ness City & Puget Sound.—A dispatch from Topeka, Kan., says: "The Pensacola, Ness City & Puget Sound Railroad Co. filed its charter to-day with the Secretary of State, the fee of $1 accompanying the letter of transmittal. Quoting from the charter itself, the Pensacola, Ness City & Puget Sound railroad is to be a broad-gauge, double-track railroad, running from Pensacola, Fla., to Puget Sound, Wash. Ter. After passing through a number of states, it will enter Kansas at or near the southwest corner of the state, heading northwesterly and passing through the counties of Cherokee, Labette, Montgomery, Elk, Butler, Sedgwick, Reno, Stafford, Ness, Lane, Gove, Thomas, and Cheyenne. Branch lines radiating from its central point at Ness City will be constructed to each of the four corners of Ness County, continuing to an indefinite length; also, branch lines from said Ness City to the north and south lines of said county, which, in the future, will be extended to and through British America on the north and to the Gulf of Mexico on the south, there connecting with a steam ferry for South America, and thus with Patagonia. The length of the main line is given at 2'475 miles, and the branch lines at 124 miles. The charter runs for 999 years, thus enabling the board of directors to complete the work laid out. The capital stock is placed at $100,000,000. The charter does not state whether it is paid up or not, but the presumptions are that it is not only paid in, but a surplus remains behind subject to call. This remarkable document was acknowledged before G. A. Borthwick, notary public, Ness City, which involved the outlay of at least 50 cents more. Unaccustomed as westerners are to such extravagant outlays, it would seem, at first sight, as though the capital stock might be impaired by such a ruinous expenditure of moneys as shown in the charter and notary fees, but then in the building of a road 2 475 miles long, we must look for the expenditure of immense sums of money. The double-tracking of the road will make a heavy draft. The payment of the $1 fee to the Secretary of State can in no way be avoided, so that this cannot fairly be called wastefulness; but the 50 cents notary fee is inexcusable, as some member of the company should act in this capacity and stop this alarming outlay of money, or the $100,000,000 will have disappeared before the entire line has been built."

Philadelphia & Reading.—The current talk in Philadelphia is that the opposition to Mr. Gowen's election to the presidency at the approaching annual meeting has been substantially withdrawn and it is thought that there is not much doubt of his election. It is said that a number of large stockholders will not vote, considering that a foreclosure and the reorganization of a new company is inevitable, and that it makes so little difference who is elected by the stockholders that the matter is not worth a serious canvass. Most of this, however, is only common report, and when the meeting really takes place there may be an entire change.

Pittsboro.—The final location of this road has been completed and work on the grading will soon be begun. It will run from the Raleigh & Augusta Air Line at Moncure, N. C., to Pittsboro, a distance of 11 miles. Most of the right of way has been given by the people along the line.

Portland & Ogdensburg.—The Receiver reports that for the quarter ending Sept. 30 this road earned $116,257; the working expenses were $65,488, leaving $50,769 net earnings. The Receiver's actual cash receipts for the quarter were $179,535, and his disbursements $167,654, leaving a surplus of $11,881, which, added to the $21,324 cash on hand at the beginning of the quarter, made $33,205 on hand at its close.

Pullman's Palace Car Co.—Suits were recently brought against this company based on an alleged flaw in the title to the property on which the town of Pullman and the company's extensive works have been built. The case came up before the Circuit Court in Chicago, and that court rendered a decision on Dec. 23 to the effect that the deed of the land referred to was valid and that the company's title is good.

Rutherford.—Five of the directors of this company have made a protest against a proposed issue of $900,000 bonds of this company, on the ground that only two or three miles have been graded, and that the issue of bonds should be postponed until enough of the road is finished to furnish a basis for the issue. The road is projected to run from a connection with the Atlanta & Charlotte Air Line through Shelby and Rutherfordton, N. C., to Marion. The counties on the line have voted $275,000 in aid of the road. The contract for building it has been let to the Massachusetts & Southern Construction Co., to which the bonds are to be issued.

St. Joseph & St. Louis.—At a recent meeting of the stockholders of this company over half the stock was represented and the directors were instructed to prepare a plan providing for the canceling of the lease of the road to the Wabash, St. Louis & Pacific Co., and for the issue of bonds to pay the floating debt which has been incurred under the present management. The road extends from Lexington, Mo., to St. Joseph, 73 miles

St. Louis & Hannibal.—On Dec. 19 last Mr. E. C. Case, Receiver, issued the following circular: "By order of the United States Circuit Court for the Eastern District of Missouri, the undersigned this day turns over to the St. Louis & Hannibal Railway Co. all property in his possession as Receiver of the St. Louis, Hannibal & Keokuk Railroad Co. The earnings of the Receiver ceased with the business dated Dec. 18; also all liabilities of whatsoever nature from the operation of the road. Connecting lines are hereby requested to separate December accounts and report to the

Receiver all revenue prior to Dec. 19. All accounts, bills or claims of whatsoever nature against the Receiver must be presented for settlement at once."

On the same date, Mr. E. C. Case, as General Manager of the new company, requests all connecting lines, express companies, etc., to report to the St. Louis & Hannibal Co. all business dated on and after Dec. 19. Car mileage should be reported to W. W. Driggs, General Freight Agent, and drafts for balances should be drawn on E. C. Case, Assistant Treasurer, at Hannibal, Mo.

St. Louis & San Francisco.—It is announced that this company has leased and will operate from Jan. 1 the Kansas City & Southwestern road, extending from Beaumont, Kan., to Cale, 75 miles. The leased line will be known as the Winfield Branch.

St. Paul & St. Croix Falls.—This company has been organized to build a railroad from St. Paul, Minn., to White Bear Lake and St. Croix Falls, a distance of about 40 miles.

San Francisco & Clear Lake.—This company has recently been reorganized and new capital secured. The company intends to build a railroad from Clear Lake in Napa County, Cal., to a point on San Francisco Bay, the distance being about 75 miles.

Southern Pacific Co.—This company's statement for the month of October is as follows:

	Atlantic system.	Pacific system.	All lines.
Earnings	$935,759	$2,113,218	$3,048,977
Expenses	435,105	826,633	1,261,738
Net earnings	$500,654	$1,286,585	$1,787,239
Add rental Mojave Division			36,355
Total net income			$1,823,594
Interest, sinking funds, and all other charges		$1,216,388	
Construction and improvements, seven months		258,842	
			1,475,230
Balance, surplus			$348,364

The Atlantic system includes 1,663 miles of railroad and the Pacific system 3,004, a total of 4,667 miles operated.

Union Pacific.—The total land sales in November were 143,669 acres for $389,339. The land sales for the eleven months to Nov. 30 were: Union Division, 693,003 acres for $1,172,270; Kansas Division, 680,827 acres for $2,748,097; total, 1,373,830 acres for $3,920,349. The total sales for the eleven months last year were 4,654,690 acres for $8,306,647, covering about 3½ times the acreage and over twice the amount of this year's sales. The sales of last year included some very large tracts of grazing land at comparatively low prices.

Vicksburg, Shreveport & Pacific.—The new prior lien mortgage for $1,323,000, to which the stockholders and bondholders have given their consent, have been duly executed and filed for record. The Central Trust Co., of New York, is trustee, and the mortgage covers the entire property of the company. The new bonds are to be used to fund floating debts and make needed improvements on the road.

Wabash, St. Louis & Pacific.—The Master's report in the foreclosure suit has been completed and will be presented to the Court on Jan. 4, when the final decree of foreclosure and sale will be asked for. The Master reports that the outstanding receiver's certificates and interest amount to $1,341,414, and the Receiver's current and floating indebtedness is $1,237,480. The gross amount of claims in litigation and other undetermined liabilities is placed at $776,000, but the Master expects that by action of the Court and by compromises this amount can be reduced possibly as much as $60,000. It is expected that the Court will grant the final decree of foreclosure very shortly.

The committee appointed by the holders of first-mortgage bonds of the Omaha Division, St. Louis, Kansas City & Northern, request all bondholders who have not already registered to send their names, addresses and number of bonds held, to Steward & Boardman, No. 49 Wall street, New York, as the foreclosure proceedings are to be pressed. Messrs. John H. Beach, James E. Pulsford, James H. Smith, Charles S. Smith and James F. Dwight are the members of the committee.

West Jersey.—This company's statement for November and the eleven months to Nov. 30 is as follows:

	November		Eleven months	
	1885.	1884.	1885.	1884.
Earnings	$85,381	$82,841	$1,199,147	$1,236.518
Expenses	54,079	50,278	737,063	736,059
Net earnings	$30,702	$32,563	$462,084	$500,459
Interest, rentals etc			274,753	282,951
Surplus			$187,331	$217,508

For the eleven months the gross earnings show a decrease of $37,371, or 3.0 per cent., and the expenses an increase of $1,004, or 0.1 per cent., leaving a decrease in net earnings of $38,375, or 7.7 per cent. Charges decreased $8,198, leaving a decrease of $30,177, or 13.8 per cent., in surplus income.

West Shore.—The Receivers' statement to the Railroad Commission for the quarter ending Sept. 30 last, gives the following figures for the quarter and for the fiscal year ending Sept. 30:

	Quarter.		Year.	
	1885.	1884.	1884-85.	1883-84.
Earnings	$1,101,931	$1,297,984	$3,992,178	$2,979,331
Expenses	1,212,852	1,213,720	4,815,158	3,664.294
Net earnings	$110,921*	$84,264	$822,930*	$684,963*
Other income	.....	3,073	14,614	3,073
Total	110,921*	$87,337	$808,366*	$681,890*
Taxes, rents, etc.	117,736	212,390	573,389	424,484
Total deficit	$228,657	$125,053	$1,381,755	$1,106,374

*Deficit.

The statement includes nothing for interest on bonds, but only the rentals, taxes, etc., actually paid.

This shows for the year an increase in gross earnings of $1,012,847, or 34 per cent., and an increase in expenses of $1,150,864, or 31.4 per cent., the result being an increase in deficit of $138,017, or 20.1 per cent. The working expenses last year were 145.7 per cent. of gross earnings, against 122.3 per cent. in the previous year.

Wisconsin Central.—This company has now secured nearly all the right of way into Chicago from the western limits of the city to Polk street. It is said that the company will build a temporary station at Polk street and will extend its line to Harrison street hereafter, if the right of way can be secured.

Zanesville & Ohio River.—A contract is reported let for the construction of this road from Zanesville southward to Malta, about 45 miles. It is intended to be part of a projected line from Chicago southwest, across Indiana and Ohio to the Ohio River.

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Boston & Lowell.

This company owns a line from Boston to Lowell, 26½ miles, with 69 miles of branches, and leases the Nashua & Lowell, 14½ miles; the Stony Brook, 13; the Wilton, 15½; the Peterboro, 10½; the Manchester & Keene, 30; the Nashua, Acton & Boston, 24; the Northern (New Hampshire), 83; the Concord & Claremont, 57; the Boston, Concord & Montreal, 186; the St. Johnsbury & Lake Champlain, 120 miles. This is a total of 649 miles. The report is for the year ending Sept. 30.

Additions during the year were the Bedford & Billerica Branch, 9 miles, completed May 1, 1885, and the St. Johnsbury & Lake Champlain road, leased from April 1, 1885.

The Northern, the Concord & Claremont and the Boston, Concord & Montreal were leased on June 1, 1884; the Nashua, Acton & Boston and the Manchester & Keene from July 1, 1884. The company's system was increased from 140 to 520 miles during the fiscal year 1883-84.

The company has $4,579,700 stock and $3,546,000 bonds. Stock was increased last year by 7,877 shares, sold to stockholders at par.

It may be added that, in addition to the lines operated directly, the company controls 40 miles of road in New Hampshire, and its trains use the Concord Railroad, from Concord to Nashua, 35 miles, under contract. It also operates the Central Massachusetts road, North Cambridge to Jefferson, under contract.

The earnings for the year were as follows:

Earnings ($6,961 per mile)		$4,037,440
Expenses (65 per cent.)		2,623,434
Net earnings ($2,438 per mile)		$1,414,006

No comparisons can be made with the previous year on account of the great changes in road worked.

The result of the year was as follows:

Net earnings, as above		$1,414,006
Taxes	$163,205	
Rentals	702,543	
Interest	263,282	
Dividends, 6 per cent	251,151	
Carried to improvement account	25,000	
		1,405,181
Balance		$8,825

The directors' report says: "The changes in our accounts, made necessary by the leases of roads in New Hampshire and Vermont, make it impossible to make any accurate comparisons of the operations of the road for the past with preceding years. The property of the corporation, including that leased, has been kept in good condition, and the repairs have been sufficient to cover all deterioration. There were 1,516 tons of new steel rails and 274,233 ties laid in the track. Many improvements have been made upon our leased roads, which must result in an increased revenue, through a reduction in the cost of operation. The track upon our White Mountains Division, between Woodsville and Fabyan's, has been greatly improved, having been relaid with steel rails and partially ballasted. Two new bridges have been built upon this division, and a restaurant erected at the Weirs. It is believed that this latter will supply a long felt want, and increase the excursion business at this place, which is one of our most important sources of revenue.

"Upon the Southern Division a large expense has been incurred in rearranging our freight yard in Boston. Three large freight houses have been built, and we are now so situated as to be able to handle about three times the volume of business upon the same land we were able to before these improvements were made. Further improvements must be made in our freight facilities the coming year to enable us to economically handle our constantly increasing business at this point. A new hay shed has been erected at East Cambridge, and from the fact that our facilities are superior, on account of their location, we have been able to command a larger share of the hay business than heretofore. Three new freight-houses have been erected in Lowell, but the increase in business at this point has been such as to crowd us seriously, and additional room must be secured at an early day.

"New passenger stations have been erected at Lake street and West Medford, and are now in use. New stations should be provided at several of our suburban points the coming year, our business having outgrown the accommodations provided. The Bedford & Billerica Branch was opened for business April 30, 1885, and has been operated since that date. It furnishes a third track between Boston and Lowell, and has enabled us to offer increased facilities for Lowell business, which have resulted in an increased income. The double track between Somerville and Arlington has been completed and put in operation. The extension of the Woburn Branch, a matter long considered, has been completed, and was opened for business Nov. 30, 1885. It is believed this extension will prove of great value in the future. A contract has been entered into with the trustees of the Central Massachusetts Railroad, providing for the completion and operation of that road between North Cambridge and Jefferson's. For such investment of money as it incurred we are secured from loss.

"April 1 a contract was entered into between the Boston, Concord & Montreal Railroad and the St. Johnsbury & Lake Champlain Railroad, providing for the operation of the latter road by the former, on a guarantee that the net earnings resulting from said operation should be sufficient to pay the interest upon the indebtedness of the latter company. This contract was entered into at the request of your directors, to prevent rival interests from obtaining control of a territory which is of great importance to this road so long as it continues the lessee of the Boston, Concord & Montreal Railroad. This report includes the operation of the St. Johnsbury & Lake Champlain Railroad, now known as the Vermont Division, for six months, and your directors are of the opinion that there will be but a slight loss for the first year's operation, and there are good reasons for believing it will soon be self-sustaining. The condition of the road and property upon coming into our possession was such as to require the immediate expenditure of a considerable amount of money to put it in a condition of safety. It is believed, when these expenditures are completed, and the road in the condition of our other leased roads, we shall receive a fair return from our investment, and the indirect advantages from a control of this property are in themselves sufficient to compensate us for any loss liable to occur.

"The year just closed has been the worst, in many respects, we have experienced for several years, on account of the demoralization of rates on business from and to the West. Since the lease of the Northern Railroad we have become interested in this class of traffic to a much greater extent than heretofore, and the earnings of that road have been most seriously affected from this cause and the reduction made in our local tariffs last spring. These two causes have rendered our lease of that road the past year a source of considerable loss where we had anticipated a fair profit. Our other leases have proved satisfactory, and with rates as at present we believe this road will, in the future, prove a source of profit to us.

"One of the most gratifying features of our past year's operation has been the large growth of local traffic upon our Southern Division, or the Boston & Lowell Railroad proper. The increase in our suburban business has been large—so large, in fact, as to tax us heavily to keep pace with it, and we must provide additional facilities, within a short time in the way of tracks between Boston and Winchester, our passenger service so occupying the existing tracks as to make it extremely difficult and expensive to handle our freight business and that of our connections. Should this local business continue to increase as it now bids fair to, it will not be long before this, of itself, will produce sufficient income to render us independent of contributive business, and the low rates that prevail upon the same do not attract competition, so that we can look upon this portion of our income as permanent, and not subject to changes affecting the rest.

"Our relations with all our business connections continue amicable."

Boston & Providence.

This company owns a line from Boston, Mass., to Providence, R. I., 44 miles, all double track; the West Roxbury Branch, 5.37 miles; the Dedham Branch, 2.22 miles; the Stoughton Branch, 4.11 miles, and the India Point Branch, 8.05 miles. It leases the Attleboro Branch, 4 miles, making 63.75 miles owned and 67.75 miles worked. The 50th annual report is for the year ending Sept. 30, 1885.

The general account is as follows, condensed:

Capital stock		$4,000,000
Bonds		500,000
Notes payable		310,000
Accounts and balances and November dividend		224,969
Profit and loss		452,174
Total		$5,487,143
Road and equipment	$4,896,174	
Stocks owned	234,104	
Materials on hand	108,382	
Bills and accounts receivable	235,490	
Cash	12,993	
		5,487,143

The bonds are plain bonds, due in 1893, and bearing 7 per cent. interest.

The traffic for the year was as follows:

	1884-85.	1883-84.	Inc. or Dec.	P. c.
Train-miles	1,027,688	1,031,945	D. 4,257	0.4
Passengers carried	5 612,410	5,482,707	I. 129,703	2.4
Passenger miles	54 947,134	55,200,708	D. 253,574	0.5
Tons freight carried	709,853	732.768	D. 22,915	3.1

The average rate per passenger-mile last year was 1.836 cents; per ton-mile, 2.830 cents.

The earnings for the year were as follows:

	1884-85.	1883-84.	Inc. or Dec.	P c.
Passengers	$1,039,275	$1,036,546	D. $27,271	2.6
Freight	593,217	614,500	D. 21,283	3.4
Mail and express	52,720	53,265	D. 545	1.0
Rents	21,854	22,837	D. 983	4.3
Total	$1,677,066	$1,727,148	D. $50,082	2.9
Expenses	1,295,739	1,374,993	D. 79,254	5.8
Net earnings	$381,327	$352,155	I. $29.172	8.3
Gross earn. per mile	24.754	25,493	D. 739	2.9
Net " " "	5.628	5,198	I. 430	8.3
Per cent. of exps	77.3	79.6	D. 2.3	...

Expenses include rentals amounting to $11,623, and taxes, which were $93,742 last year, against $103,832 in the preceding year.

The result of the year was as follows:

Net earnings, as above		$381,327
Balance of interest account	$27.624	
Dividends, 8 per cent	320,000	
		347,624
Surplus for the year		$33,703
Balance, Oct. 1, 1884		418,471
Surplus, Oct. 1, 1885		$452,174

The report says: "Two dividends of 4 per cent. each, clear of taxes, have been earned and declared. The surplus earnings of the year, with an amount received on account of land sold on Columbus avenue in 1880, have been used in payment of a note of $50,000, due January 1, 1886. The debt is thereby reduced for the present to $810,000. While the gross receipts have fallen off $50,081, the liberal expenditures of recent years for rolling stock, rails and improvements have brought the expenses down in a marked degree. At the same time, the equipment of the road has been kept in excellent condition. A bridge of masonry and iron over Ten Mile River in East Providence, and the changes at Readville, have been finished. A new stone passenger house at Highland Station, on the West Roxbury branch, will be ready for use in a few months. Small lots of land have been bought at Providence, Attleboro, South Attleboro, West Roxbury and Dedham. At Stoughton land has been bought with a view to better accommodations."

Nothing has been done as to the improvement of the terminal facilities in Providence, owing to the failure of the City Council to adopt a definite plan.

Baltimore & Philadelphia.

This company owns a line (the old Delaware Western) from Wilmington, Del., to Landenburg, Pa., 20 miles. It has under construction a road from the Maryland state line to Philadelphia, 37 miles, which will be part of the Baltimore & Ohio's extension to Philadelphia. The report is for the year ending Sept. 30.

The earnings of the 20 miles in operation were:

	1884-85.	1883-84.	Inc. or Dec.	P. c.
Earnings	$47.949	$55,738	D. $7.789	14.0
Expenses	42,636	46,903	D. 4.267	9.1
Net earnings	$5,313	$8,835	D. $3.522	39.8
Gross earn. per mile	2,397	2,787	D. 390	14.0
Net " " "	266	442	D. 176	39.8
Per cent. of exps	88.9	84.1	I. 4 8	....

The road carried 60,185 passengers and 58,063 tons of freight, against 59,686 passengers and 87,463 tons of freight in the preceding year.

The report says: "In common with the manufacturing interests throughout the country the establishments situated on the line of that portion of your road which is in operation have been affected by the business depression which has prevailed during the year and the decrease in the revenue is from this cause. The road-bed, track, rolling stock and buildings have been maintained in good condition during the year, and the operation of the road has not been attended with any serious loss or accident.

"The work of constructing the main line of your company, from the Maryland state line to the city of Philadelphia, has made rapid progress during the year and the tracki s now laid to within 8 miles of the terminus at the Schuylkill river. The legal difficulties which delayed the commencement of work in the city of Philadelphia having been overcome, and the necessary municipal legislation procured and accepted by your board, the work of construction is being rapidly pushed forward in that city, and an early completion of the line is assured."

Buffalo, New York & Philadelphia.

This company's statement for the year ending Sept. 30 last shows a total of 663 miles operated, included 440 miles owned and 223 leased. This is a decrease of 11 miles from last year.

The earnings for the year were as follows :

	1884-85.	1883-84.	Inc. or Dec.	P. c
Earnings	$2,367,937	$2,614,774	D. $246,837	9.4
Expenses	1,844,364	2,087,841	D. 243,477	11.7
Net earnings	$523,573	$526,933	D. $3,360	0.6
Gross. earn. per mile.	3,572	3,879	D. 307	7 9
Net " " .	790	782	I. 8	1.0
Per cent. of exps	77.9	79.9	D. 2.0	....

Expenses include taxes paid and all ordinary renewals of track and equipment.

The result of the year was as follows :

Net earnings as above		$523,573
Interest on investments		25,500
Total		$549,073
Rentals of leased roads	$36,303	
Interest on funded debt under funding plan	894.610	
" floating debt, etc	114,206	
" car trusts	58,627	
		1,103,746
Deficit for the year		$554,673

The amounts given above do not include payments on principal of car trusts or land mortgages paid off during the year.

Naugatuck.

This company owns a line from Stratford Junction, Conn., to Winsted, 57 miles, and it also uses the New York, New Haven & Hartford track from Stratford Junction to Bridgeport, 4 miles, making 61 miles in all. The report is for the year ending Sept. 30.

The company also furnishes train service, under agreement, over the Watertown & Waterbury road, a branch 4½ miles long.

The general account is as follows, condensed :

Stock		$2,000.000
Funded debt		150,000
Accounts and balances		31,133
September expenses		37,785
Profit and loss		403,398
Total		$2,622,316
Road and property	$2,423,284	
Stocks and bonds owned	12,600	
Materials on hand	41,878	
Accounts and bills receivable	57.744	
Cash	85,810	
		$2 622,316

The funded debt consists of first-mortgage bonds bearing 4 per cent. interest. The amount authorized is $750,000, but only $150,000 have been issued.

The train mileage for the year was as follows :

	1884-85.	1883-84.	Inc. or Dec.	P. c.
Passenger	181,329	180,488	I. 841	0 4
Freight	121,023	141,428	D. 20,405	14.4
Service and switching	89,658	71,032	I. 18,626	26.2
Total	392,010	392,948	D. 938	0.2

There was a considerable decrease in the freight train mileage, and a large increase in the service and switching mileage of locomotives.

The earnings for the year were as follows:

	1884-85.	1883-84.	Inc. or Dec.	P.c.
Freight	$362,428	$375,513	D. $13,085	3.5
Passengers	251,767	266,075	D. 14.308	5.4
Mail, etc	37,047	35,127	I. 1,920	5.5
Total	$651.242	$676,715	D. $25,473	3 8
Expenses	437,979	451,099	D. 13,120	2.9
Net earnings	$213,263	$225,616	D. $12,353	5.5
Gross earn per mile	10,676	11,094	D. 418	3.8
Net " "	2,496	3,699	D. 203	5.5
Per cent. of exps	67.2	66.7	I. 0.5	....

Expenses include taxes, which were $31,603 last year, against $32,349 in the preceding year.

The result of the year was as follows:

Net earnings, as above		$213,263
Balance of interest account	$4,465	
Dividends, 10 per cent	200,000	
		204,465
Surplus for the year		$8,798
Balance, Oct. 1, 1884		394,600
Total balance, Sept. 30, 1885		$403,398

The report of the directors says: "We deem it only necessary to say, that no addition has been made to the funded or floating debt, or to construction account during the year. The condition of the road and its bridges has been materially improved. The equipment has been increased and made more efficient; and all expenses of every name and nature have been charged to operating expenses."

New York, Providence & Boston.

This company owns a line from Providence, R. I., to Groton, Conn., 62½ miles ; the Warwick Branch, 9⅞ miles, and the Pontiac Branch, 5 miles. It leases the Pawtuxet Valley road, 5⅝ miles, making 77⅜ miles owned and 83 miles worked. The Pontiac Branch was added last year. The report is for the year ending Sept. 30.

The company owns a controlling interest in the Providence & Stonington Steamship Co., whose lines run from Providence, Stonington and Groton to New York.

The company has $3,000,000 capital stock and $1,360,000 funded debt, including $1,000,000 first 7s, and $300,000 Extension 4s. It pays interest also on $100,000 Pawtuxet Valley 6s and $60,000 second 7s on the same line.

The earnings for the year were :

	1884-85.	1883-84.	Inc. or Dec.	P.c.
Passenger	$599,653	$633,242	D. $33.589	5.3
Freight	464,514	473,397	D. 8,883	1.9
Mail, etc	75,719	78.692	D. 2,973	3 8
Total	$1,139,886	$1,185,331	D. $45.445	3.8
Expenses	7,61,516	727,655	I. 38,861	5 3
Net earnings	$378,370	$457,676	D. $79,306	17.3
Gross earn. per m	13,901	15,196	D. 1,295	8.5
Net earn. per mile	4 614	5.868	D. 1,254	21.3
Per cent. of exps.	66.8	61.4	I. 5.4	....

The decrease in earnings is due to general depression in business and competition for through traffic. The ordinary operating expenses, including taxes, are $7,706 less than in the previous year. The extrordinary expenses included above are $41,566 more. This large deficiency is mainly accounted for by the outlay for rebuilding bridges and locomotives, the cost of which was $32,252.

The result of the operations of the year was as follows :

Net earnings, as above		$378,370
Dividends on investments		40,245
Total		$418,615
Interest paid, less interest received	$83,226	
Dividends, 8 per cent	240,000	
		323,226
Balance, surplus		$95,389

In December, 1884, the Pontiac Branch, 5 miles in length, connecting the main line with the Pawtuxet Valley road, was purchased for the sum of $70,300. Two quarterly dividends of 2½ per cent. have been received upon the company's investment in the Providence & Stonington Steamship Line. This stands in the balance sheet, at par, $804,900, although its stock has been recently sold at 150. No progress has been made during the year in securing better terminal facilities in Providence, but the increasing difficulty in providing suitable accommodations for the traveling public must soon lead the City Council there to take action in the matter.

Northeastern (South Carolina.

This company owns a line from Charleston, S. C., to Florence, 102 miles, which forms part of the Atlantic Coast line. Its report is for the year ending Sept. 30.

The company leases the Central Railroad of South Carolina (Lane to Sumter, 40 miles) jointly with Wilmington, Columbia & Augusta Co., but its operations are not included in the report.

The equipment includes 24 locomotives ; 15 passenger, 3 postal and five baggage cars ; 133 box, 3 refrigerator, 6 stock, 145 platform and 15 caboose cars.

The general account is as follows, condensed :

Stock		$899,350
Funded debt		1,836,182
Floating debt, current accounts		110,978
Profit and loss		9,251
Total		$2,855,761
Road and property	$2,509,024	
Stocks and bonds	123,547	
Cash, bonds and cash assets	223,190	
		2,855,761

The funded debt includes $182 certificates of indebtedness $820,000 first-mortgage 8s; $322,000 second-mortgage 8s and $694,000 consolidated 6s. The company holds $17,000 of the consolidated bonds.

The earnings for the year were as follows :

	1884-85.	1883-84.	Inc. or Dec.	P.c.
Freight	$329,623	$349,203	D. $19,580	5.6
Passengers	179,726	161,672	I. 15,054	9.1
Mails, etc	60,709	55,595	I. 5,114	9.1
Total	$570,058	$569,470	I. $588	0.1
Expenses	407,238	404,523	I. 2,715	0 6
Net earnings	$162,820	$164,947	D. $2,127	1.3
Gross earnings per mile	5,589	5,583	I. 6	0.1
Net " " "	1,596	1,617	D. 21	1.3
Per cent. of expenses	71.4	71.0	I. 0.4	....

Expenses include taxes paid ; also all renewals and improvements of road and equipment. The only charge to construction is for extension of terminal facilities.

The income account is as follows :

Net earnings, as above		$162,820
Other receipts		27,080
Increase in floating debt		12,437
Total		$202,337
Interest on bonds	$133,000	
Dividends on st ck, 6 per cent	53,961	
Sundry payments	7,440	
Reduction in debt certificates	8,914	
Terminal improvements	14,098	
		217,413
Excess of payments		$15,076
Assets, Oct. 1, 1884		238,2 6
Balance, assets Sept. 30, 1885		$223,190

The traffic for the year was as follows :

	1884-85.	1883-84.	Inc. or Dec.	P.c.
Passenger train miles	234,828	211,503	I. 23,325	11.0
Freight " "	246,711	254,544	D. 7,833	3.1
Total locomotive miles	568,425	534,222	I. 34.203	6.4
Passengers carried	117,000	111.023	I. 6,067	5.5
Tons freight carried	183,196	183.389	D. 193	0.1
Ton-miles	14,085,108	13,551,649	I. 533,459	3.9

Locomotive service cost last year 12.52 cents per mile run. The average freight train load was 57.1 tons. Of the passengers carried 52,599 were through and 64,491 local. The freight included 134,549 bales of cotton and 85,655 barrels of naval stores.

The deficit in operating the Central Railroad was $3,194, of which one-half, or $1,597, is paid by this company. The loss on the traffic agreement with the Georgetown & Lanes road was $443.

The road has been fully maintained. Improvements includes 1,300 tons of new steel rails and two new 18 by 24 in. cylinder locomotives. All these renewals and additions are included in expenses.

New York & New England.

This company operates a line from Boston to Fishkill-on-Hudson, N. Y., 228.56 miles (including 11.02 miles leased from the Newburg, Dutchess & Connecticut); 108.93 miles of branches owned and 54.08 leased; a total of 391.57 miles. The report is for the year ending Sept. 30.

The company also leases the Norwich & Worcester road, 66.40 miles, but the operations of that line are not included in the report.

Since Jan. 1, 1884, the road has been operated by a Receiver appointed by the United States Circuit Court. The receivership terminated by order of the Court on Dec. 31, 1885.

The general balance sheet, condensed, is as follows :

Stock issued		$18,699,000
Boston, Hartford & Erie bonds convertible into stock		1,301,000
Bonds issued		14,031.000
Other funded debt		1,904,604
Unfunded debt		2,203,384
Total		$38,138,988
Road and property	$36,708,041	
Company's stock held by trustee	46,000	
Supplies on hand	219,651	
Accounts receivable	436,453	
Cash	45,061	
Profit and loss, debit balance	683,782	
		38,138,988

The bonds issued include $6,000,000 first-mortgage 7s; $4,000,000 first-mortgage 6s and $4,031,000 second mortgage 6s. The other funded debt includes $1,646,532 due on Boston terminal land purchases and $258,072 car trust obligations. Since Sept. 30, the date of the balance sheet, the car trust debt and all the unfunded debt, except the usual current balances, has been settled by the issue of additional second-mortgage bonds and $2,000,000 preferred stock.

The traffic for the year was as follows :

	1884-85.	1883-84.	Inc. or Dec.	P.c.
Pass. train miles	1,195,790	1,218,675	D. 22,876	1 8
Freight train miles	910,965	1,131,383	D. 220,418	19.5
Total loco. miles	2,735,028	3,205,341	D. 470,313	14.6
Passengers carried	4,620,579	4,368,090	I. 252,489	5.8
Passenger-miles	58,818,387	54,299,316	I. 4,519,071	8.3
Tons freight carried	1,715,062	1,786,332	D. 70,670	4.0
Ton-miles	107,639,053	138,534,292	D.30,894,339	22.3
Av train-load :				
Passengers, No	49.2	44.6	I. 4.6	10.3
Freight, tons	118.2	122.4	D. 4.2	3.4

Locomotives ran 1.29 miles for each revenue train mile last year. Locomotive service cost 22.81 cents per mile run.

The average earn ngs per train mile and per unit of traffic were, in cents :

	1884-85			1883-84		
	Earnings.	Expenses.	Net.	Earnings.	Expenses.	Net.
Per pass. train mile	112.00	74.00	38.00	106.00	87.00	19.00
Per freight train mile	214.10	144.70	69.40	181.30	153.50	27.80
Per passenger-mile	1.93	1.51	0.42	2.00	1 95	0.05
Per ton-mile	1.72	1.23	0.49	1.41	1.25	0.16

The average rate per ton-mile on through freight last year was 0.964, and on local, 3.156 cents, against 0.806 and 3.089 cents in the preceding year. Through freight was 65.6 per cent. of the total ton-mileage last year, against 73.5 per cent. in 1883-84.

The earnings for the year were as follows:

	1884-85.	1883-84	Inc. or Dec.	P.c.
Freight	$1,850.266	$1,955,686	D. $105,420	5 4
Passengers	1,139,916	1,995,530	I. 44,386	4.1
Mail and express	144,389	144,898	D. 509	0.3
Miscellaneous	154,375	141,788	I. 12,587	8.9
Total	$3,288,946	$3,337,902	D. $48,956	1.5
Expenses	2,207,579	2,797,367	D. 589,788	21.1
Net earnings	$1,081,367	$540,535	I. $540,832	100.1
Gross earn. per mile	8,661	8,731	D. 70	0.8
Net " "	2,848	1.414	I. 1,432	102.0
Per cent. of expenses.	67.1	83.8	D. 16.7	....

The large increase in net earnings, it will be seen, was due entirely to the reduction in the working expenses.

The income statement is as follows:

Net earnings, as above		$1,081,367
Other income		23,473
Total		$1,104,840
Taxes and insurance	$94,138	
Rentals	130,132	
Interest, Boston terminal lands	73.891	
" car trusts	30,546	
" other, and sundry charges	30,264	
" on bonds	859,330	
		1,218,301
Balance, deficit for the year		$113,461
Add old accounts, etc		80,447
Total		$193 908

Charges on account of new construction and additions to property amounted to $43,985 for the year.

The directors say in their report : "It is true that the charges payable out of income for the year are less than this amount ($113,461) by $44,000, representing coupons funded by the company in its second-mortgage bonds, and if considering only the Receiver's income and disbursements, the deficit should be reduced by this amount, and so be stated at $69,461.

"The amount charged to rent of other roads includes a payment of $72,676 to the Norwich & Worcester road during the year. This may not be expected as a future charge, the rental of that road having been reduced, as is explained in this report. A fair statement of the matter is that your road has substantially earned its fixed charges, though technically it has failed to do so by $113,461.

"The most important question is whether these net results have been obtained by neglecting repairs and renewals, and thereby lessening the value of the property. Upon this it may be stated that the railroad commissioners of the several states, in giving the result of their official examinations of your road, speak very highly of its condition, and it is believed that the increased net out of smaller gross earnings is not the result of any starving of the plant, but because the volume of traffic which barely pays expenses has been lessened (thereby affecting the ratio of net to gross), and also because the prices of labor and supplies, especially coal, have been low, which has reduced the absolute expense of operating the road.

"The attention of your directors has been mainly devoted to the payment of the debts of the company, and the restoration of the property to the company's control. The matter of the settlement with creditors was fully considered by the committee appointed at the stockholders' meeting of last year, and was then referred to the finance committee, consisting of Messrs. Higginson, Martin, Blake, Leith and Tower, with full power."

They then proceed to give a history of the settlement with the car trust and of the issue of preferred stock for the payment of the floating debt and of the reconstruction of the lease of the Norwich & Worcester, whereby rent is reduced from 10 to 8 per cent. In conclusion, the directors say: "Your directors cannot close this report without expressing their very high appreciation of the services rendered to your property by Charles P. Clark, as President and as Receiver. He was chosen President at a time when the company, having failed to earn its fixed charges for the previous year by over $600,000, could not borrow the money needed to meet its current expenses. Convinced that, sooner or later, a receivership was necessary to protect your property from disintegration, he demonstrated that necessity to the directors, and obtained their assent to the appointment of a receiver when a suit was brought for that purpose. Although a difference of opinion existed as to the wisdom and expediency of this course, subsequent events have proved beyond a doubt that a receivership was absolutely necessary for the preservation of the property, and that delay would have seriously endangered its safety. Simultaneously with his appointment as Receiver, Mr. Clark resigned as President, but remained on the board of directors, and continued to consult and act in harmony with them in all things affecting the interests of the property. He has always taken the lead in suggesting plans to relieve the property from its debt and from the receivership, and in all efforts to that end has cordially coöperated with the finance committee having the matter in charge. He has taken an active part in obtaining subscriptions for the preferred stock, and has negotiated settlements with some of the largest creditors. The car trust matter received his early attention, and it was largely through his individual efforts that the scheme for exchanging car trust certificates for second-mortgage bonds was carried through successfully, and the fixed annual charges of the company for the next 10 years thereby reduced about $125,000. Acting with the Finance Committee, the negotiations for the reduction from 10 to 8 per cent. in the rental of the Norwich & Worcester road were consummated, in the face of an empty treasury and poor credit, and over $50,000 a year for 80 years to come thereby saved to this company. The discontinuance by the Receiver of unprofitable through business, the intelligent and hearty co-operation of every man in his employ, the restoration of public confidence, the renewal of friendly relations with connecting roads, and the revival of business, have produced results which are better than the most sanguine expected, and cannot fail to be satisfactory to you all. The figures presented in the annexed tables show that the net earnings of the road for the year ending Sept. 30, 1885, were nearly sufficient to meet the fixed charges for the year. The increased earnings enabled the company to sell its securities at par and to pay off its floating debt. This debt having been paid, the Court will undoubtedly pass an order restoring the property to your own control at an early day."